RETURN THE TIDES PROJECT: Tidal Crossing Data Sheet- Phase I (circle one): **MEASURED ESTIMATED**

IMPORTANT: before filling out this form review the instructions sheet and list of codes and abbreviations

Location Information			
Topo Name/ID # (copy from preliminary list)		Unique no. (assigned by GIS)	
Town		Topo quadrant (NW,NE,SW,SE)	
Water Body/Stream Name (From Topo, if not named, get local info and enter in quotes)		Marsh Ownership (P/T/S/F + cons)	
Street/Road Name (From Topo, if not named, get local info and enter in quotes)		Road Jurisdiction (P/T/S/F)	
Landmark/Location Description (From Topo, only if road or stream not named on topo)		LOCATION MARKED ON TOPO (check)	

Field visit Information	
Date/time/volunteer name(s)	
Weather (circle one)	Sunny Partly Cloudy Overcast Rain
Tide (circle height and direction)	HIGH/MID/ LOW Incoming/Outgoing/Change/Slack
	Enter Location and Description (e.g. "from crossing looking upstream")
A Photo #1 - Reference #:	
B Photo #2- Reference #:	
C Photo #3- Reference #:	
D Photo #4- Reference #:	
E Photo #5- Reference #:	

Crossing Information	**Remarks**
Type (circle one choice)	Bridge / Culvert / Dam/Other (describe in detail):
Fill (circle one choice)	Road on Marsh / Headland to Headland
Road runoff (circle one choice)	Onto Marsh / Into Creek
Shape (circle one choice)	Round/oval / Rectangular / other (sketch):
Material (circle one choice)	Iron/Aluminum/concrete / plastic /masonry / other (describe):
Dimensions of opening (Ho, Wo)	Height: ft in. Width: ft in
Nature of crossing: (circle all applicable) Upstream Downstream	Perched culvert/ pooling/ scour/ bank slumping/ rubble in stream perched culvert/ pooling/ scour/ bank slumping/ rubble in stream
Upstream Channel Width (UchW)	Ft Distance from Crossing (DC): Ft
Downstream Channel Width (DChW)	Ft Distance from Crossing (DC): Ft
Height from Channel bottom to culvert bottom: Upstream (UchH,)	Ft
Height from Channel bottom to culvert bottom: Downstream (DchH)	Ft
Length of fill over marsh (LF)	Ft
Channel Length at crossing (In middle) (CL)	Ft
Road Description (circle all applicable)	Lanes: 1 2 3 4/ curbs / paved sidewalks
Road Surface Material (circle one)	Asphalt/Concrete/Gravel/Dirt/Other (describe):
Condition (1-5*) of Bridge or culvert	1 2 3 4 5
Condition (1-5*) of Road	1 2 3 4 5

*1. Excellent 2. Good 3. Fair 4. Poor 5. Need of Immediate Repair

PHASE I DATA SHEET (PAGE 2/2) Topo Name/ID #: **Crossing name:**

Circle the Most Appropriate Response

Restriction Classification Scheme		
Classification	**Evidence of Flow Restriction/Erosion**	**Notes**
1 Upstream	Unrestricted/ No Pooling	
2 Upstream	Flow Detained/ Slight Erosion	
3 Upstream	Minor Pooling/Erosion Present	
4 Upstream	Significant Pooling/Significant Erosion Present	
5 Upstream	Major Pooling/Major Erosion Present	
Classification	**Evidence of Flow Restriction/Erosion**	
1 Downstream	Unrestricted/ No Pooling	
2 Downstream	Flow Detained/ Slight Erosion	
3 Downstream	Minor Pooling/Erosion Present	
4 Downstream	Significant Pooling/Significant Erosion Present	
5 Downstream	Major Pooling/Major Erosion Present	
Classification	**Channel vs. Crossing/ Opening**	
1 Upstream	Channel Width < Opening Width	
2 Upstream	Channel Width = Opening Width	
3 Upstream	Channel Width 1.1 to 2.0x Opening Width	
4 Upstream	Channel Width 2.1 to 5.0x Opening Width	
5 Upstream	Channel Width 5.1x + Opening Width	
Classification	**Channel vs. Crossing/ Opening**	
1 Downstream	Channel Width < Opening Width	
2 Downstream	Channel Width = Opening Width	
3 Downstream	Channel Width 1.1 to 2.0x Opening Width	
4 Downstream	Channel Width 2.1 to 5.0x Opening Width	
5 Downstream	Channel Width 5.1x + Opening Width	
Classification	**Vegetation Comparison**	
1	Upstream = Downstream	
2	Upstream Slightly Different Than Downstream	
3	Upstream Different From Downstream	
4	Upstream Much Different Than Downstream	
5	Upstream Completely Different Than Downstream	
Classification	**Flood Potential**	
1- Low	Flooding unlikely	
2- Med	Need detailed survey to determine flooding risk	
3- High	Structures likely to be flooded if restriction removed	

ADD SKETCH PAGE FOR EACH SIGNIFICANT RESTRICTION (circle) **SKETCH ATTACHED**

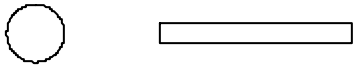
Narrative Description and General Notes: (attach additional pages as needed)

Volunteer signature(s):

RETURN THE TIDES PROJECT: Phase I Tidal Crossing Data Sheet, SKETCH PAGE

Location	
Topo Name/ID # (copy from preliminary list)	
Field visit Information	
Date/time	
Weather	Sunny Partly Cloudy Overcast Rain
Tide	High / Low Incoming / Outgoing Change (Slack)

Plan View Sketch



1"=

North Approximate Scale (Feet)

General Notes: (attach additional pages as needed)

Volunteer Signature(s):

Casco Bay Return the Tides
Instructions for Tidal Crossing Data Sheet, Phase I

EQUIPMENT: Field map, Preliminary phase crossing listing, Phase One data sheets (one per crossing), blank paper, copies of Topo map quadrants, RTT fact sheets, pencils, measuring tape, rubber boots or mud sneakers, camera, film, clipboard, orange vest.

Part 1 is a preliminary assessment of the crossing to record its basic characteristics and determine if it is apparently restrictive. If the crossing is clearly restrictive, you should gather Measured information and make a sketch of the site. If a site appears from the outset to be either very small or not significantly restricted dimensions may be ESTIMATED be estimated by pacing or armspan in the interest of time. and a site sketch need not be made. The most restrictive crossings will be selected for Phase II tidal curve measurements.

DATA POINTS:

LOCATION INFORMATION

Topo Name/ID number: Topo/sequential number by topo. (Copy from Crossing List)

Unique number: leave blank, the GIS program assigns this number automatically when the record is entered in the system.

Town name: **Town**, city or other minor civil division**.** (Copy from Preliminary List)

Topo Quadrant:: quadrant of topographic quadrangle map- e.g.: NW, NE, SW, SE. (Copy from Preliminary List)

Water body/stream name: From topo map or from local knowledge/information if not named on topo map (indicate local names not printed on topo map by using quotation marks). (Copy from Preliminary List)

Marsh ownership: If known, insert one or more of following as appropriate: private, town, state, federal. Add qualifier “cons” (for conservationif land is held for conservation. Include detailed ownership information in comment section if known.

Road/Street Name: Name of the street or road crossing the water body/stream as printed on the Topo map. If not a street, insert other identification such as “Guilford Rail line.” (Indicate local names not printed on topo map by using quotation marks). (Copy from Preliminary Phase Crossing List)

Road/Street Jurisdiction: if known, insert one of following: private, town, state, federal.

Landmark/Location Description: Complete this item only if stream and road names are not printed on Topo map. If necessary, record distance and direction from an identified landmark on the topo map (e.g., 0.6 miles east of US HWY. 1 on Blue Point Road). (Copy from Preliminary Phase Crossing List)

Location Marked on Topo Map: the exact location of each crossing on a copy of the Topo map using shis symbol:

with the bullet over the exact crossing location. Indicate the map has been marked by checking the data sheet box. This information will be used by the GIS system to enter the position of the crossing in the data base.

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FIELD VISIT INFORMATION:

Date/time/volunteer name(s): record date and time of site visit (important for tide info) and full names of all volunteers

Weather: circle applicable description

Tidal Conditions: Circle approximate tide level (low, mid, high) and tidal current flow direction (incoming, outgoing, change/slack). You may consult the tide table for general reference, but record local conditions at crossing by observing water level and flow directions.

Photographs: Take at least 5 photos as follows:

#1,2: Standing on the creek bank, photograph the crossing from the upland ("upstream") and seaward ("downstream") sides.

#3,4: Standing at the crossing, photograph the marsh looking upstream and downstream.

#5: Finally take at least one overview photograph of the marsh and crossing to show the entire setting, this may be from a nearby high point where the road emerges onto the marsh.

Record a description of the locations where the photos were taken. Record roll and photo number, mark and label printed photos as follows. Example: "SPO/FR 2 A: Anthoine Creek /Broadway. View from upland side".

Crossing type: Indicate Bridge/Culvert/Dam/Other. (Copy from Preliminary Phase Crossing List)

Road on Marsh: **Does** the road approach the crossing on fill placed on the marsh surface, or does the crossing go from headland to headland (no fill on marsh)? Circle appropriate choice.

Road Runoff: Note and describe how road runoff is directed at the crossing and approaches. Freshwater runoff directed onto the marsh can damage it. If runoff is carried to the center of the crossing and drains directly into the tidal creek, there is less freshwater impact on the marsh vegetation.

S**hape**: Circle appropriate choice or make sketch

Material: Circle appropriate choice or describe

Dimensions of opening: BRIDGES: Record height and width of opening (smallest dimension for water flow). Height is measured from lowest horizontal object under bridge to channel bottom at center, width is measured at narrowest horizontal opening perpendicular to channel centerline.

CULVERTS: Record height and width of opening (smallest dimension for water flow). or diameter if round. If there are multiple structure at a single crossing, note number and describe each. Also note material for culverts.

Upstream/Downstream Channel Width: Restrictive bridges and culverts often cause substantial erosion of stream banks, especially near the restriction. Measure the channel width at a point beyond any erosion that may be due to increased current speed through the restriction. Except for very small channels (less than 10' wide), fifty feet from the crossing is a minimum distance. Note the distances, upstream and downstream, from the crossing where the measurements were taken and indicate location on sketch. If possible, measure at equal distances upstream and downstream from the crossing.

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Defining channel width: Many tidal creeks have gently sloping banks, making "channel width" hard to define. For this study, measure channel width from the high marsh/low marsh dividing line on each side of the creek. This is typically the upper limit of *Spartina alterniflora*. Note any difficulties in measuring width.

Nature of Crossing: Note and circle all applicable features separately for upstream and downstream (seaward) side of crossing.

Length of fill over marsh: Note the length of the fill from upland to upland along the centerline of the road or other feature.

Height from Channel bottom to culvert bottom: Culverts that are not flush with the channel bottom may cause tidal delays and pooling. Note the distance from the channel bottom to the bottom of the culvert.

Crossing width: **Note** the entire width of the fill on the marsh surface immediately adjacent to the crossing.

Culvert length/Bridge width: Pace off the total length of the crossing along the centerline of the stream and record approximate width.

Road description: **Circle** all applicable road features.

Road Surface Material: Note type of material such as asphalt, concrete, gravel, dirt, other (describe)

RESTRICTION CLASSIFICATION SCHEME

Evidence of Flow Restriction/Erosion: As you visually assess the crossing, characterize the bank erosion and pooling and circle an appropriate classification for upstream and downstream.

As with any ranking approach, objectivity is difficult to maintain, especially when first starting. When ranking the degree of bank erosion, the lowest scores should be given to those sites that most closely resemble natural stream conditions. This resemblance can be determined by studying the surrounding downstream conditions and similar streams that are not affected by road crossings. As you observe more, you will become familiar with typical conditions. Highly eroded sites will show bank failure or slumping; wide, rounded creek pools; and the build-up of rubble and riprap in the streambed.

Channel vs. Culvert Opening: Use the dimensions recorded above to compute the crossing ratio and circle an appropriate classification for upstream and downstream.

Vegetation Comparison: **Analyzing** the differences in vegetation from upstream to downstream can take a trained eye, especially since the differences may be subtle. Moreover, the differences may not be related to a restriction of salt water. Visually assess the habitat both upstream and downstream and record any difference in frequency of salt-tolerant and salt-intolerant plant such as common reed (*Phragmites australis*) or freshwater species such as cattails (*Typha sp.*) and common loosestrife *(Lythrum Salicaria*). In extreme cases, the habitat may evolve into shrub or forested swamp, and the former wetland may be invaded by upland species. Circle appropriate classification for upstream and downstream areas. Refer to the plant handouts for additional information.

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Flood potential: Rank flood potential as follows:

1- LOW- there are no structures located near the marsh or the structures present are so high above the marsh that induced flooding is highly unlikely

2- MEDIUM- the potential for induced flooding can be ascertained only through detailed engineering field surveys.

3 HIGH- High probability that structures near the marsh will be flooded if the restriction is removed.

Sketch: Make a simple "bird's eye view" sketch of the site, with notable features labeled and upstream and downstream sides indicated. Indicate which direction is north and the approximate scale of the sketch. The sketch should show road, fill, crossing, scour pools, marsh, upland, road drainage and incorporate buildings, vegetation types, and crossing configuration.

Narrative comments: Write a brief narrative description of the crossing, the associated marsh and the surroundings. Try to capture the essence of the site, considering the following factors as they may be applicable: overall value and appeal of the site or extent of degradation ("a little gem of a marsh in an unexpected spot," "a sodden, stinking mess of putrid trash"), aesthetic value from a wildlife (birds, fish, shellfish, mammals) or landscape perspective (invasive plants, viewshed, etc.), public visibility, educational potential, nature of the surrounding area, potential for restoration and benefits of restoration, potential issues relating to restoration and anything else that may be of interest or helpful in describing the site and its restoration potential. Historic information and local knowledge about the site, its use (bird watching, hunting, harvesting, launching, etc.) and local value is very helpful. Comment on any special features not apparent from the data recorded above which might make this crossing or marsh a candidate for closer study or restoration or which may complicate a restoration effort. If you speak to any one at the site, explain the project, offer them a fact sheet and try to get their name and address (recruit them!)