

**Courtmacsherry
Timoleague and
Kilbrittain
Sewerage Schemes
MARINE SURVEY**

**Drogue Tracking
on August 18th 2004
Spring Tide**

Released at HW+5
Courtmacsherry Tide
on August 18th 2004

Courtmacsherry Levels

BST	CD (m)
01:34	0.5
07:21	3.5
13:48	0.4
19:38	3.6

KEY

- POSITION FIXED
- SPEED (m/sec)
- TRACK

Surface
2m depth
3m depth

Scale 1 : 12,500

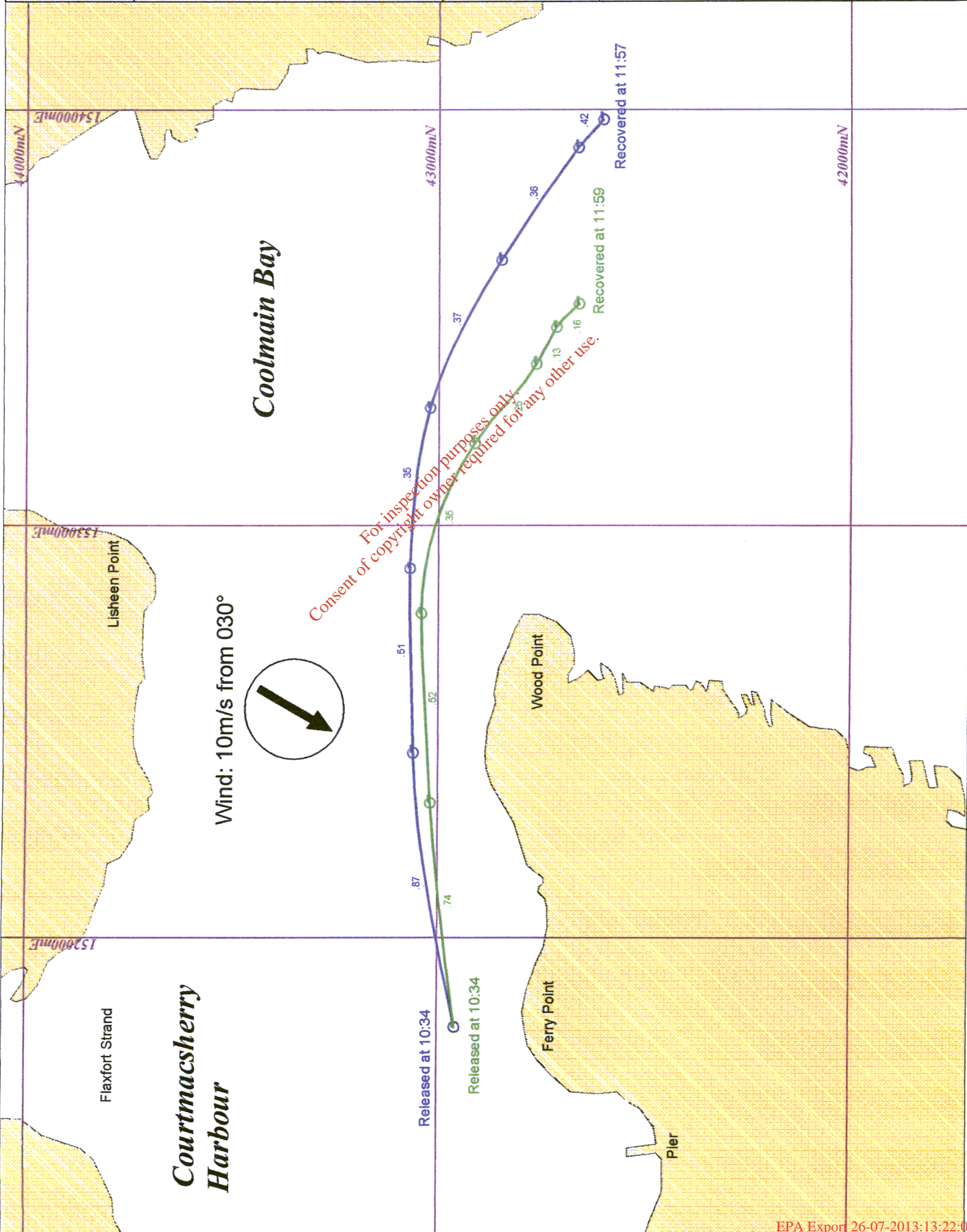
**IRISH
HYDRODATA Ltd**
Rathmacullig West
Ballygarvan Co. Cork
info@hydrodata.ie

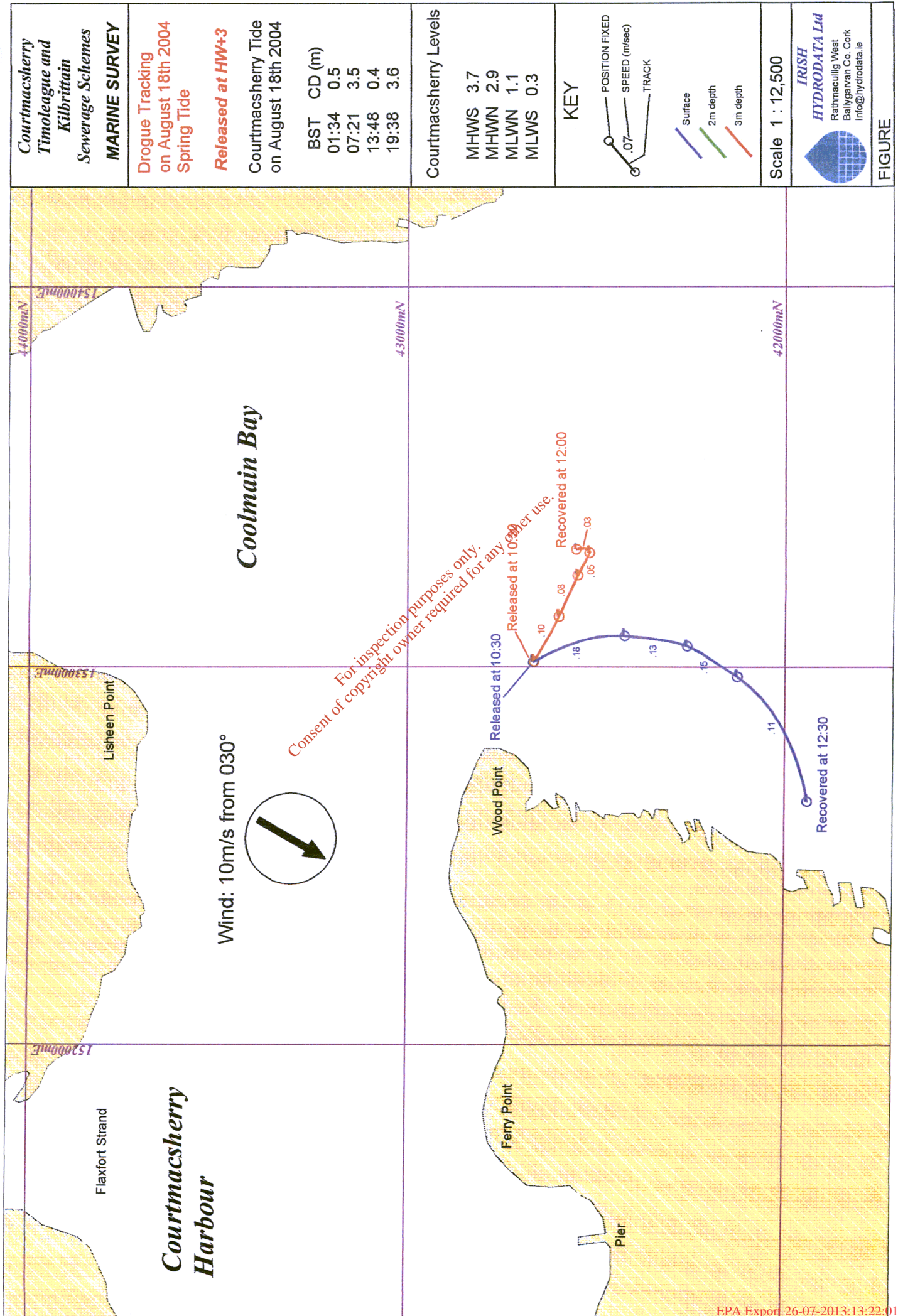
FIGURE

Wind: 11m/s from 040°

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<p><i>Courtmacsherry Timoleague and Kilbrittain Sewerage Schemes</i></p> <p>MARINE SURVEY</p> <p>Drogue Tracking on August 18th 2004 Spring Tide</p> <p>Released at HW+3</p> <p>Courtmacsherry Tide on August 18th 2004</p>	<p>BST CD (m)</p> <p>01:34 0.5</p> <p>07:21 3.5</p> <p>13:48 0.4</p> <p>19:38 3.6</p>	<p>Courtmacsherry Levels</p> <p>MHWS 3.7</p> <p>MHWN 2.9</p> <p>MLWN 1.1</p> <p>MLWS 0.3</p>	<p>KEY</p> <p>POSITION FIXED</p> <p>SPEED (m/sec)</p> <p>TRACK</p> <p>Surface</p> <p>2m depth</p> <p>3m depth</p>	<p>Scale 1 : 12,500</p> <p>IRISH HYDRODATA Ltd Rathmacullig West Ballygarvan Co. Cork info@hydrodata.ie</p> <p>FIGURE</p>
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Courtmacsherry
Timoleague and
Kilbrittain
Sewerage Schemes
MARINE SURVEY

**Drogue Tracking
on August 18th 2004
Spring Tide**
Released at HW+3

Courtmacsherry Tide
on August 18th 2004

BST	CD (m)
01:34	0.5
07:21	3.5
13:48	0.4
19:38	3.6

Courtmacsherry Levels

MHWS	3.7
MHWN	2.9
MLWN	1.1
MLWS	0.3

KEY

- POSITION FIXED
- SPEED (m/sec)
- TRACK

Surface
2m depth
3m depth

Scale 1 : 12,500

IRISH HYDRODATA Ltd
Rathmacullig West
Ballygarvan Co. Cork
info@hydrodata.ie

FIGURE

Courtmacsherry Timoleague and Kilbrittain Sewerage Schemes MARINE SURVEY

Drogue Tracking on August 18th 2004 Spring Tide

Released at HW+1.5

Courtmacsherry Tide on August 18th 2004

BST	CD (m)
01:34	0.5
07:21	3.5
13:48	0.4
19:38	3.6

Courtmacsherry Levels

MHWS	3.7
MHWN	2.9
MLWN	1.1
MLWS	0.3

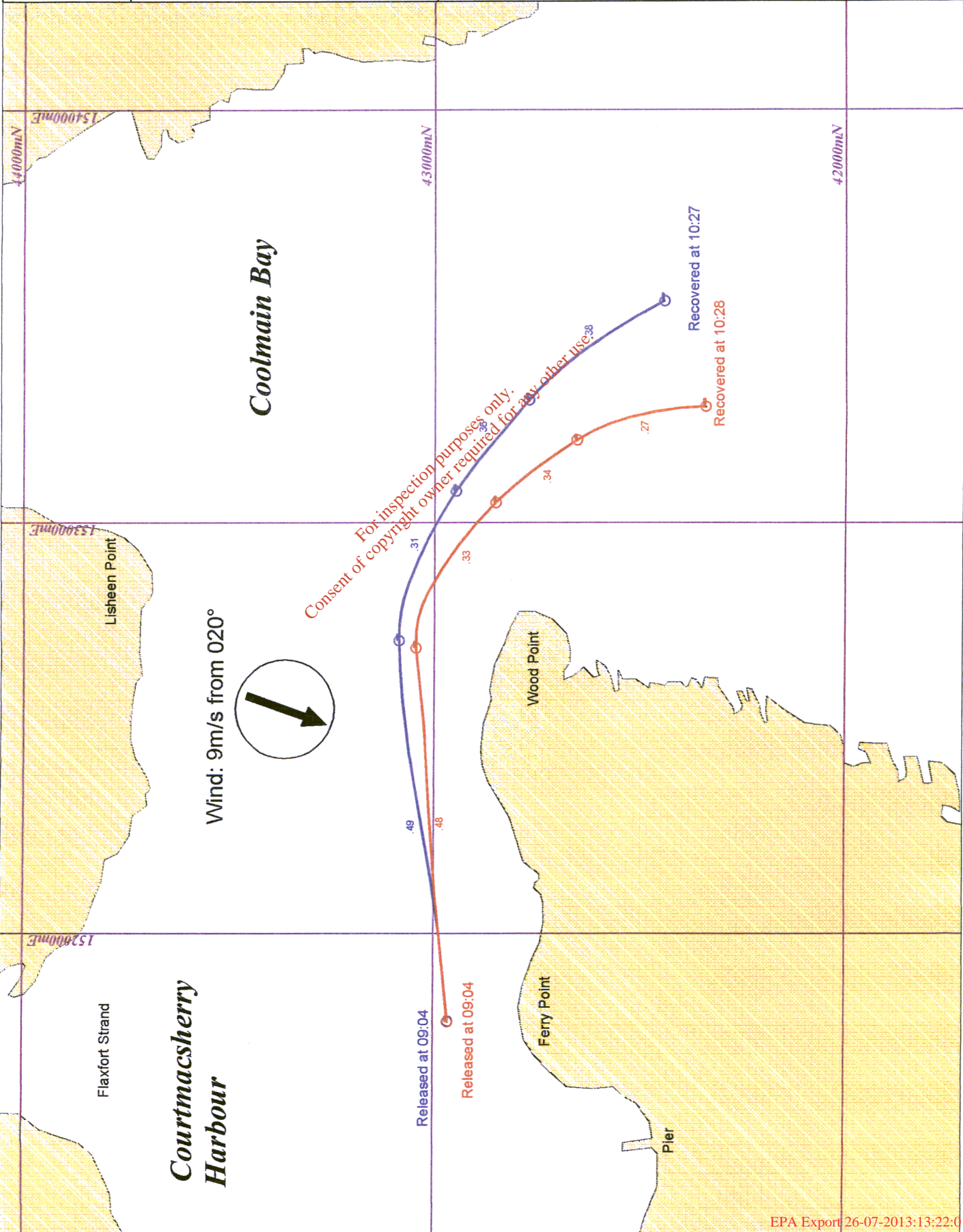
KEY

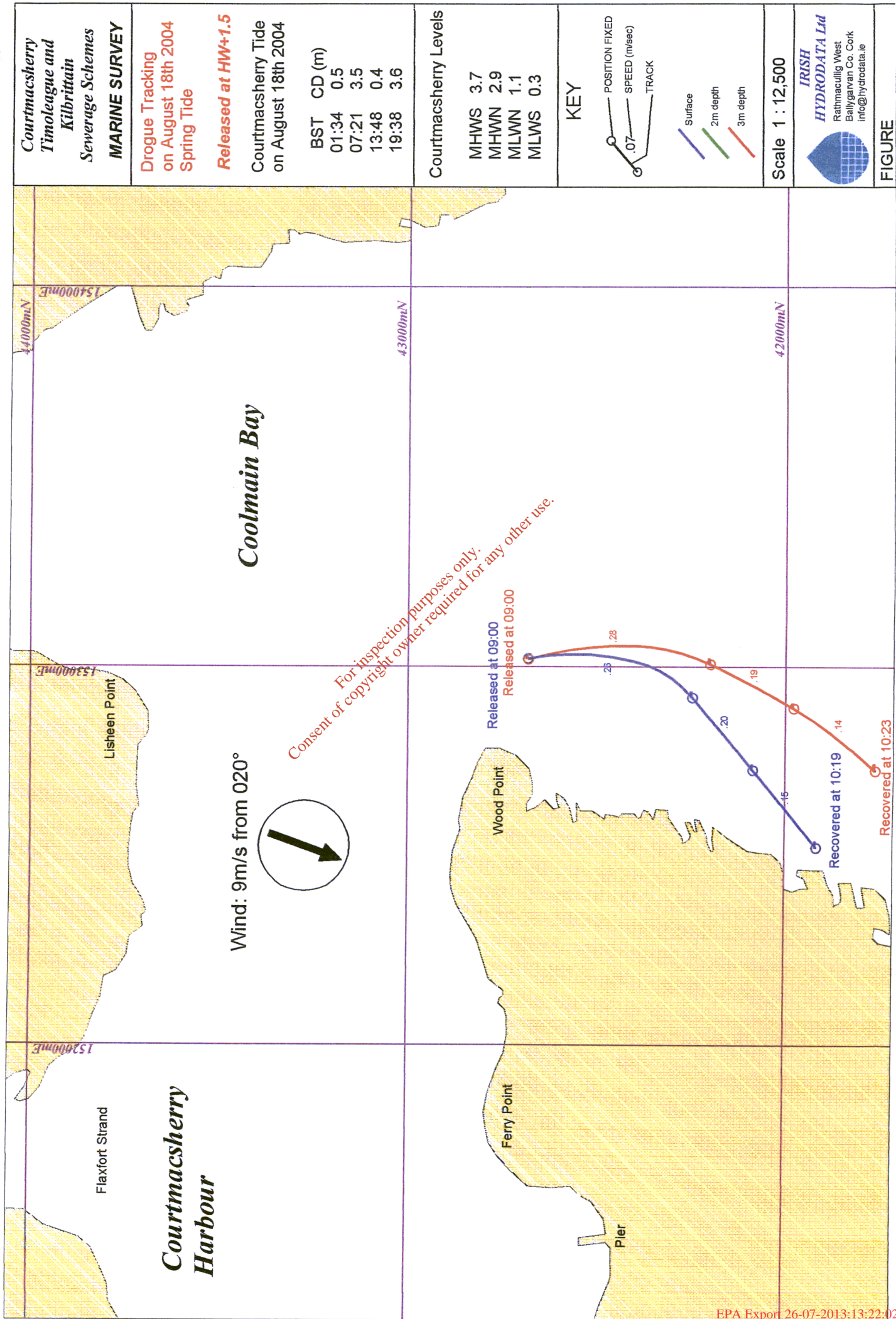
- POSITION FIXED
- SPEED (m/sec)
- TRACK
- Surface
- 2m depth
- 3m depth

Scale 1 : 12,500

IRISH HYDRODATA Ltd
Rathmacullig West
Ballygarvan Co. Cork
info@hydrodata.ie

FIGURE

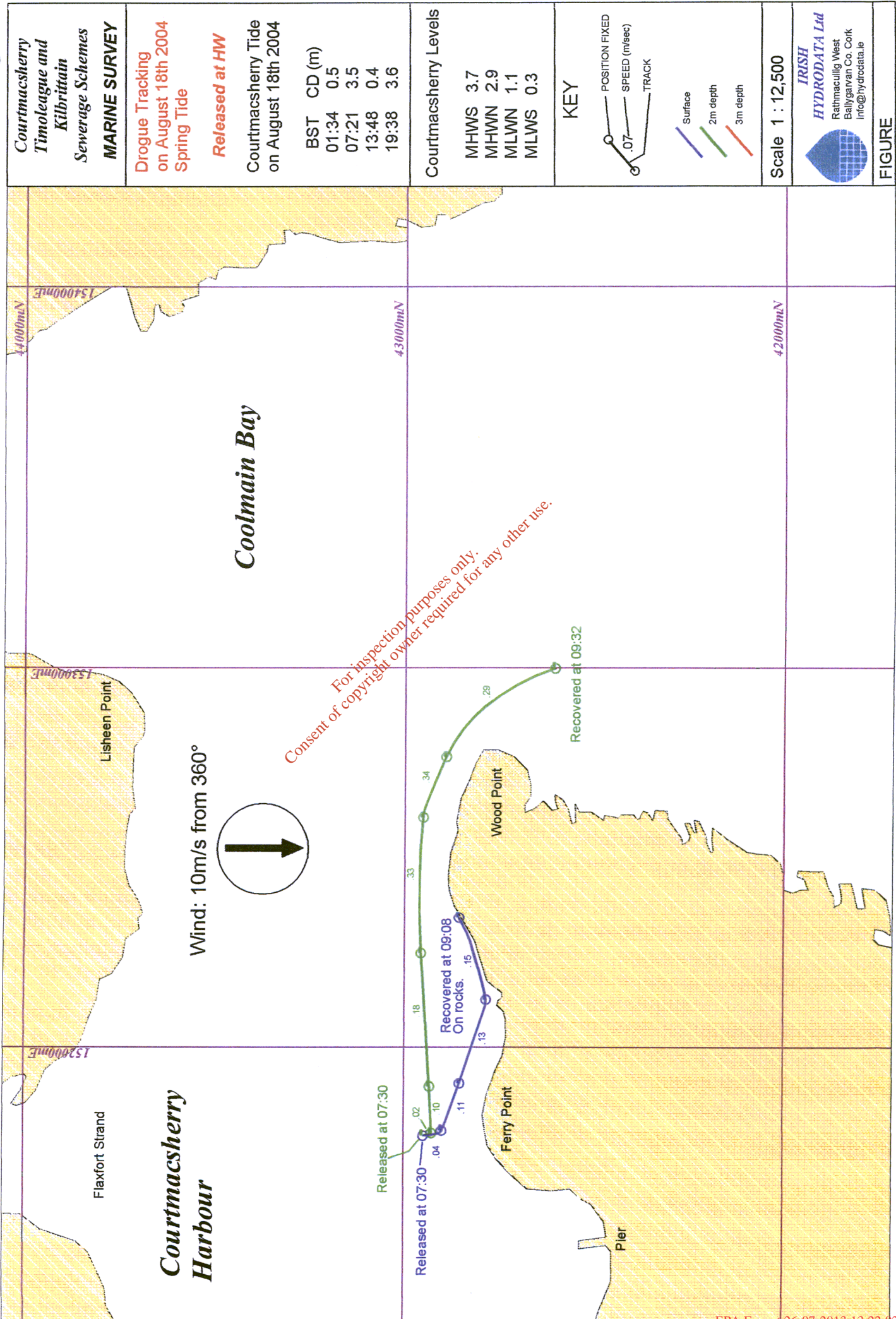




Wind: 9m/s from 020°



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**Courtmacsherry
Timoleague and
Kilbrittain
Sewerage Schemes
MARINE SURVEY**

**Drogue Tracking
on August 18th 2004
Spring Tide**

Released at HW

Courtmacsherry Tide
on August 18th 2004

BST	CD (m)
01:34	0.5
07:21	3.5
13:48	0.4
19:38	3.6

Courtmacsherry Levels

MHWS	3.7
MHWN	2.9
MLWN	1.1
MLWS	0.3

KEY

- POSITION FIXED
- SPEED (m/sec)
- TRACK

Surface
2m depth
3m depth

Scale 1 : 12,500

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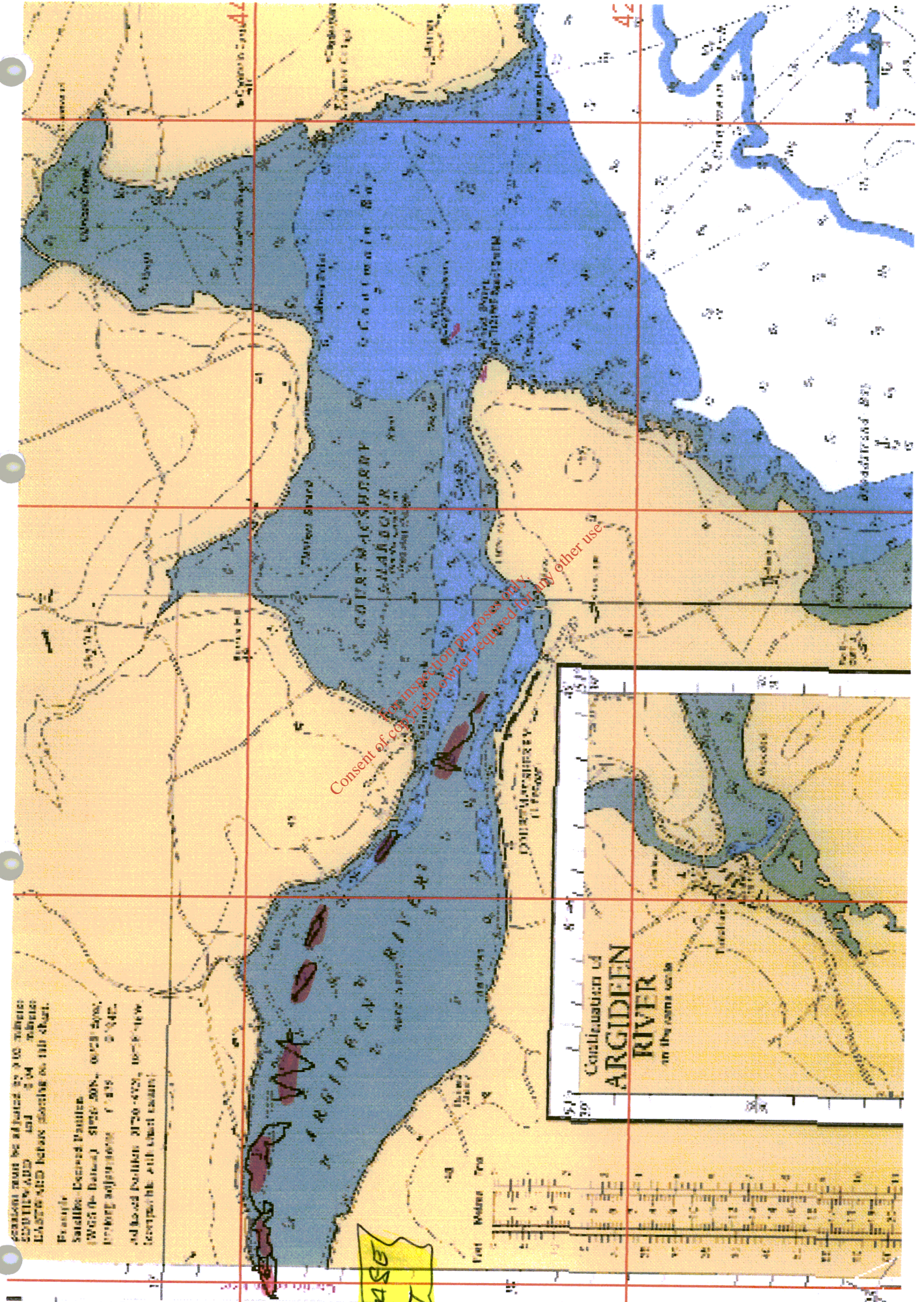
FIGURE

ANNEX 7

DYE PATCH TRACKING

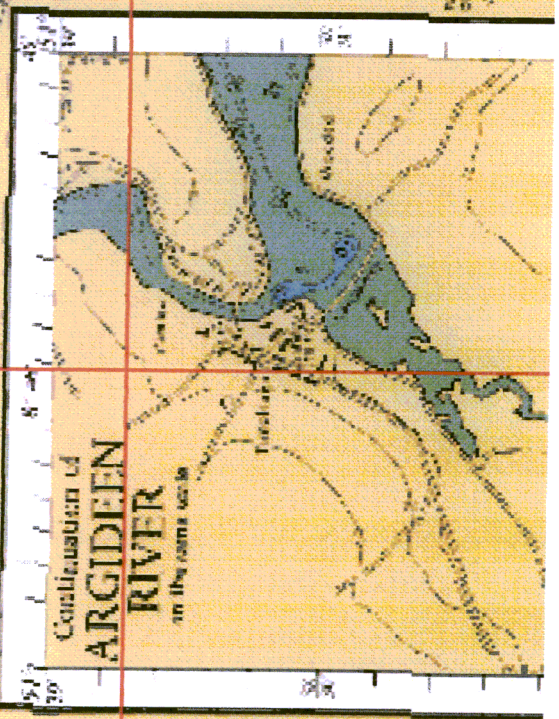
(Plots not yet prepared)

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soundings must be adjusted by 0.10 meters
 (0.33 FEET) and 0.04 meters
 (0.13 FEET) before sounding on this chart.
 Example:
 Sounding: Decreased Position
 (WGS 84 datum) 5125.20M, 00°28' 40N,
 bearing adjusted 0.135 = 0.14M.
 Adjusted Position: 5125.065, 00°28' 40N
 (corresponds with chart soundings)

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4000Y

↑

RELEASE POINT

EBB
 04G
 11/9/04

2000Y

Courtmacsherry / Timoleague Sewerage Scheme**Hydrographic and Water Quality Model Study****Progress Report****20th April 2005**Revised.
20/4/05**1. Model Development**

A very refined finite difference mesh of 15m by 15m was used to model Courtmacsherry Harbour and Approaches. The study domain extends from Barry's Point north to upstream of Timoleague. The finite difference domain size is 659 × 373 grids, which represents a total of 245,800 grid cells. This grid spacing is sufficient to allow accurate resolution of the flow patterns, shoreline, inter-tidal geometry, low tide river channel, outfall nearfield and pollutant plume dispersion. Each cell was defined as either land or sea (wet and drying cells). Irish Hydro Data Ltd. was commissioned to carry out a bathymetric survey of Courtmacsherry Harbour paying particular attention to defining the low water channel and adjoining tidal flats. This survey data was combined with the bathymetry data from the 1 : 25000 scale Admiralty Chart (ref no. 2081) and interpolated using Kriging interpolation method to produce a 15m resolution grid.

2. Model Calibration

The model boundary conditions, bathymetry, low flow channel geometry and roughness coefficients were fine tuned to produce good agreement between computed hydrodynamics and measured hydrodynamics, drogue tracks and current metering at survey sites. Further fine tuning of model bathymetry is required to produce more realistic wet and drying of the inner mud flat areas. This work is undergoing at present. A sponge layer at the open sea boundaries had to be provided to dissipate numerical noise that would otherwise be reflected at the boundary eventually making the solution unstable.

3. Preliminary Outfall Site Selection

The following four potential outfall sites were investigated as part of the Outfall site selection process:

	Easting	Northing	Reference
Outfall A	149100	43840	Midway in Estuary between Timoleague & Courtmacsherry
Outfall B	151910	43010	Courtmacsherry
Outfall C	152910	42350	Approaches west of Wood Point
Outfall D	147320	43540	Timoleague

Simulations were carried out modelling 3DWF (32 l/s) faecal coliform loads at secondary treated concentration of 2.2×10^5 Counts/100ml. A conservative T_{90} of 24hours was specified. Simulations were carried out over repeating spring and neap tidal cycles.

The provisional results indicate that Outfall Site B adjacent to Courtmacsherry is the preferred option. The analysis also shows that taking the outfall west of Wood Point into the approaches to the harbour (Site C) is of no additional benefit over Site B. The model simulations clearly show that discharging near Timoleague (site D) will result in a considerable build-up of pollutant which will have ramifications for nitrate loads to the estuary and consequently this site would not be recommended even if tidal balancing was provided.