ORGANOCHLORINES PROGRAMME ENVIRONMENTAL SURVEY DATABASE: USERS MANUAL

Organochlorines Programme
Environmental Survey Database Prepared By:

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Executive Summary

This users manual describes the structure and operation of the Access database that holds the sampling and analytical data from the Ministry for the Environment's Organochlorines Programme Environmental Survey.

The database consists of four primary tables that hold the Environmental Survey data. Generally, the data was transferred from Excel spreadsheets provided by the analysing laboratories to the primary tables using macros. This mechanism minimised the possibility of transcription errors in the data. The database also holds supporting tables that maintain information used by the Query Builder to access data from the primary tables.

The Query Builder allows the generation of complex cross-tab queries from the dataset. The output from the Query Builder is a report in column format displaying sample information and analytical results for contaminant concentrations in a variety of environmental media. By specifying the search criteria, selective datasets can be produced. A number of standard queries are provided with the database. If additional queries are required, this manual details how these should be constructed. Any new query prepared is automatically saved by the database.

The data produced in a cross-tab report can be exported in a variety of different formats. One of the most useful of these is as an Excel file, which then allows the data to be further manipulated by the end user. All the data that are exported from the database are exported in text fields. In Excel, the data can be converted into numerical values by referencing the exported data using formulas.

Disclaimer

The Ministry for the Environment holds no responsibility for any errors or inaccuracies contained within this database. The Ministry publications on the environmental survey must be used as the definitive record of the sampling and analytical data obtained from this study.

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1 Introduction

In 1995, the Ministry for the Environment commenced a national Organochlorines Programme to characterise the extent of contamination of the New Zealand environment by selected organochlorine contaminants, and establish risk-based environmental acceptance criteria for these substances. The organochlorines that are the focus of this programme are:

- the polychlorinated dibenzo-p-dioxins (PCDDs) and the polychlorinated dibenzofurans (PCDFs). These compounds are often referred to generically as 'dioxins'
- polychlorinated biphenyls (PCBs)
- organochlorine pesticides including DDT, aldrin, dieldrin and chlordane
- chlorophenols, in particular pentachlorophenol (PCP).

The environmental survey was undertaken to determine the background concentrations of the target organochlorine substances in the New Zealand environment. This survey has involved the collection and analysis of approximately 250 samples of air, soil, river water, river biota and estuarine sediment and shellfish for these contaminants.

An Access database has been built that holds the sampling information and contaminant concentration data from this environmental survey. This database is available from the Ministry's website (http://www.mfe.govt.nz/issues/waste/organo.htm).

This document is intended to give the reader an overview of the Organochlorines Programme Environmental Survey database (v1.1). The overview includes a summary of the database structure and details the construction of cross-tab query reports to retrieve information from the database.

The database accompanies the following Ministry publications, which report and discuss the results of the environmental survey:

Ambient concentrations of selected organochlorines in air (Buckland *et al*., 1999)
Ambient concentrations of selected organochlorines in soils (Buckland *et al*., 1998a)
Ambient concentrations of selected organochlorines in rivers (Buckland *et al*., 1998b)
Ambient concentrations of selected organochlorines in estuaries (Scobie *et al*., 1998)

For background information on the Organochlorines Programme, the reader is referred to these scientific publications, or to the Ministry overview publication *Reporting on Persistent Organochlorines in New Zealand* (Ministry for the Environment, 1998). All of these documents on the Organochlorines Programme Environmental Survey are available from the Ministry's website.

2 Notes

The database contains a number of queries and subforms that have been hidden in the application. These queries and forms are not required by the user for routine operation of the database. To display these objects select from the tools menu, options \ view \ show hidden objects.

The use of automated procedures to construct this database has reduced the occurrence of errors in the result data. All data entries have been checked for errors against the original sampling information and against the original analytical results reported by the analysing laboratories.

3 Database structure

The database comprises four primary tables. These tables hold the data obtained from the Organochlorines Programme Environmental Survey. So that queries can be constructed easily, the database has not been normalised to third normal form. The four primary tables that hold information about the samples are explained in Section 3.1. Supporting tables are discussed in Section 3.2.

If the reader wishes to use the database directly without necessarily understanding the structure of the database, they may proceed immediately to Section 4.

3.1 Primary Tables

3.1.1 Composites

The Composite Table contains a record of all composite samples produced from samples collected as part of the Organochlorines Programme Environmental Survey. A composite is a collection of individual samples, combined to form a representative sample. In some instances, a composite may only be one sample.

Composite samples are categorised as primary, blind duplicate, field rinsate blank, field blank, laboratory blank or laboratory QC.

A COMPOSITE comprises one or more INDIVIDUAL SAMPLES

A COMPOSITE generates one or more CERTIFICATES of analysis

The laboratory number assigned by the primary analytical laboratory during sample composting is used to uniquely identify each composite sample in this database.

The following text describes the fields that make up the Composite Table.

Field Name	Description
CompositeID	Unique identifier allocated to each composite sample (Primary Key). This number was assigned by the primary laboratory during the sample composting
CompositeDetails	Concatenation of each FieldID for each individual sample that makes up the composite, eg, Composite of: HC-03-1, HC-03-2
CompositeDescription	Type of sample, and general sampling location
CompositeClass	Type of composite eg, soil, air, shellfish
CompositeSub-Class	Composite Sub-class eg, brown trout and rainbow trout, longfinned eel and shortfinned eel
CompositeType	Type of composite ie, primary, blind duplicate, field rinsate blank, field blank, laboratory blank or laboratory QC
RelatedComposite	If the composite is a blind duplicate, or a primary sample with a corresponding blind duplicate, the related sample CompositeID is given in this field
Comments	Comments relating to the composite sample

3.1.2 Individual Samples

The Individual Sample Table contains information collected about the samples that were taken from sampling sites around New Zealand and which in turn make up the composite samples.

Each INDIVIDUAL SAMPLE is represented in only one COMPOSITE sample

The following text describes the fields that make up the Individual Sample Table.

Field Name	Description
CompositeID	Composite identification which identifies which composite the individual sample belongs to (Foreign Key)
IndividualID	Unique number identifying each individual sample making up the composite. This number was assigned by the primary laboratory
FieldID	Field identification number assigned to each individual sample eg, HC-03-1. When there is only one individual sample that makes up a composite, the FieldID and the CompositeDetails are the same.
Parameter	Measured parameter eg, weight of eel, map reference
LOD	If the value is less than the limit of detection, this field contains a '<' symbol
Value	Value of the measured parameter
Units	Units of the measured parameter

3.1.3 Certificates

Each composite was analysed for a number of different organochlorine compounds. For each set of tests (ie, PCDDs/PCDFs, PCBs, organochlorine pesticides and chlorophenols, the analysing laboratory issued a certificate. The Certificates Table maintains a list of all the certificates issued for each composite.

Each CERTIFICATE is issued for only one COMPOSITE

Each CERTIFICATE contains one or more RESULTS

The following text describes the fields that make up the Certificates Table.

Field Name	Description
CertificateKey	Concatenation of CertificateID and CertificateType (Primary Key)
CompositeID	Composite identification which identifies which composite sample these results belong to
CertificateID	Issuing laboratories internal sample number eg, K2032, FBC60312
CertificateName	Type of results represented in this certificate, eg, dioxins, PCBs
CertificateFilename	Original file that the result data was imported from
CertificateType	Type of certificate ie, Primary, QC Cross-check, Laboratory Duplicate 1, Laboratory Duplicate 2 or Averaged Result

3.1.4 Results

The Results Table contains all the data that appears on the certificates issued by the analysing laboratory. Each result is associated with a certificate (CertificateKey) and a composite identification (CompositeID).

Each RESULT is from only one CERTIFICATE

Each record in the Results Table holds information about one result parameter. A set of results makes up a certificate. The following text describes the fields that make up the result table.

Field Name	Description
CertificateKey	Concatenation of CertificateID and CertificateType (Foreign Key)
CompositeID	Composite identification which identifies which composite sample the result belongs to
Parameter	Measured parameter, eg, OCDD, PCB#202, pp-DDT
LOD	If the value is less than the limit of detection, this field contains a '<' symbol
Value	Value of the measured parameter
Units	Units of the measured parameter
ResultBasis	Basis of reporting the result, eg, as received basis, wet weight basis, dry weight basis
ResultType	Origin of the result, ie, Primary (includes Averaged Result of Laboratory Duplicates), QC Cross-check, Laboratory Duplicate 1 or Laboratory Duplicate 2

3.2 Supporting Tables

The database also contains several supporting tables. These tables maintain information that is used by the Query Builder. These are:

3.2.1 Parameters

The Parameters Table holds a list of all the parameters measured in the Organochlorines Programme Environmental Survey. Parameters are selected from this list in the Query Builder for inclusion in the cross-tab report.

Associated with each parameter is a sort number. This number represents the relative position of each parameter in the list that appears in the Query Builder.

3.2.2 Query

The Query Builder form enables users to create complex cross-tab reports. All queries that are created in the Organochlorines Programme Environmental Survey database are automatically saved to the Query Table.

A QUERY comprises of one or more QUERY DETAILS

3.2.3 Query Details

The Query Details Table records the specific details of queries constructed by a user.

Each QUERY DETAIL belongs to only one QUERY

3.2.4 Sample Classes

Composite samples are categorised by a sample class and a sub-class. The list of allowed combinations of these classes and sub-classes are maintained in the Sample Classes Table. This data is used in drop-down lists in the Query Builder form.

3.3 Result Data

3.3.1 Methods used to import data

Analytical results and information were provided in Excel spreadsheets by the analysing laboratories.

Three approaches were used to transfer data from the analytical certificates to the access database. These were:

- using macros to selectively collate data from the certificates and download into the Access database
- cutting and copying the data from the certificate into a separate file and downloading into Access
- manually entering the data into the Access database.

Macros were used extensively to transfer the data to the Access database. They were the primary means by which data was transferred from Excel to the database. This mechanism minimised the possibility of transcription errors in the data. The source Excel file that the results data was imported from is given in the CertificateFilename field of the Available Certificates section of the Composite Details form.

Cutting and copying data, and the manual entry of data into the database were also used, but only on a very limited number of occasions for certain parameters.

3.3.2 Conventions

Certificate Type

Each certificate is labelled in the database as either a Primary Certificate, QC Cross-check, Laboratory Duplicate 1, Laboratory Duplicate 2, or Averaged Result. This data is recorded in the CertificateType field of the Certificates Table.

Primary Certificate. These represent result certificates from ordinary samples (ie, primary samples, laboratory blanks, intra-laboratory QC samples etc).

QC Cross-check. These represent result certificates that are from samples analysed by a second, independent, laboratory (in addition to the primary analysing laboratory).

Laboratory Duplicate 1 and Laboratory Duplicate 2. These represent result certificates from primary samples analysed more than once by the same laboratory.

Averaged Result. This certificate denotes results that are derived from the Laboratory Duplicate 1 and Laboratory Duplicate 2 certificates. The procedure that was used to create the additional 'averaged result' certificate is outlined below.

1. One certificate is labelled as Laboratory Duplicate 1 and the other as Laboratory Duplicate 2.
2. A certificate based on the averaged results (labelled accordingly) is created.
3. For each result in the averaged certificate, use the average of the two duplicate results if both values are greater than the LOD, or the maximum LOD value if the two results are both less than the LOD.
4. Append to the units of the averaged certificate results 'n=2' to denote an averaged value.

Results in the Results Table are also labelled with a similar key except that Averaged Results are labelled as Primary Certificates. This enables the Query Builder to build a cross-tab report containing a single set of results for all composite samples.

Basis of Reporting

Each result is reported on either an as received basis, dry weight basis, whole body weight basis or wet fillet weight basis. The Basis of Reporting information for all matrices is as follows:

Air: Contaminant concentration and particulate data are reported on an as received basis. Meteorological and climatological data are not given a defined basis of reporting.

Soil: Contaminant concentration and organic carbon data are reported on a dry weight basis. Extraneous matter and moisture content data are reported on an as received basis.

River Water: Contaminant concentration data are reported on an as received basis. River flow data is not given a defined basis of reporting.

Eel: Contaminant concentration, moisture and lipid data are reported on a wet fillet weight basis. Fish age, length and weight data are reported on an as received basis.

Trout: Contaminant concentration, moisture and lipid data are reported on a wet fillet weight basis. Fish age, length and weight data are reported on an as received basis.

Sediment: Contaminant concentration, organic carbon data and particle fractions are reported on a dry weight basis. Moisture content data is reported on an as received basis.

Shellfish: Contaminant concentration, moisture and lipid data are reported on a wet whole body weight basis. Shellfish size are reported on an as received basis.

Laboratory Blank: Contaminant concentration data for laboratory blanks analysed with each set of samples are reported on either an as received basis, dry weight basis, wet fillet weight basis or wet whole body weight basis depending upon the type of primary samples being analysed (ie, air, soil, eel etc).

Matrix Spike: A type of Laboratory QC sample analysed. These results are reported as 'Actual'.

The Basis of Reporting information is appended to the Result Table of the database.

4 User interface

When the database is first opened, the user is prompted with the menu screen shown in Figure 4.1. The Query Builder, Composite Details and Individual Sample Details forms can be accessed, or the user interface window closed, by clicking on the respective box. Each of these menu items is discussed below.

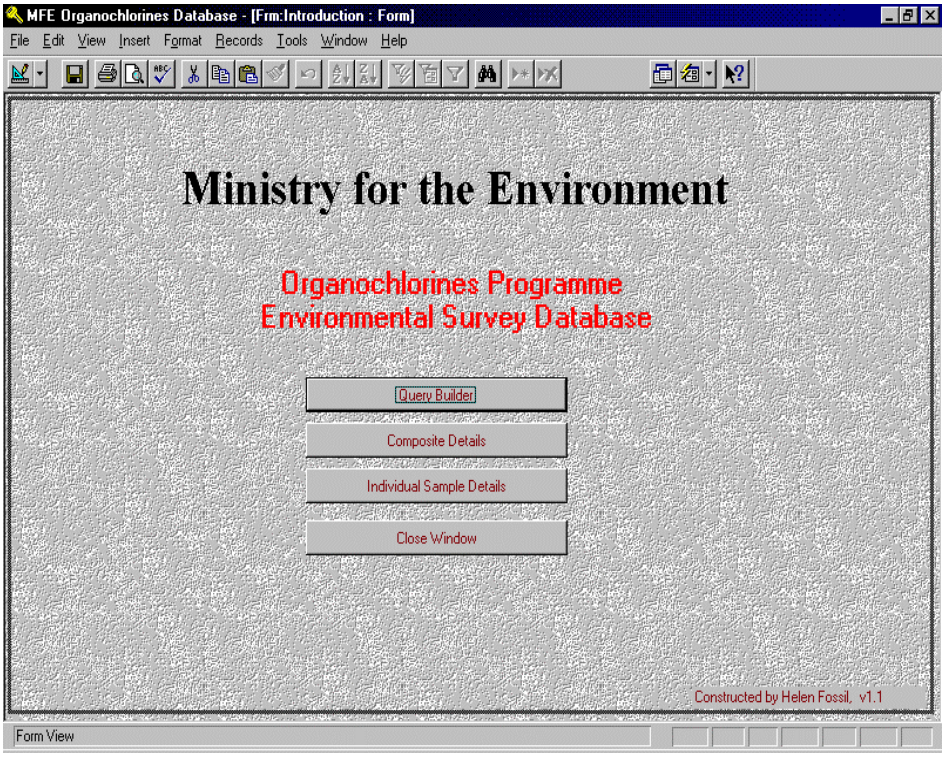


Figure 4.1 User interface menu screen

1. Query Builder
   The Query Builder option provides an interface for the user to create complex cross-tab queries. From the Query Builder form, the user can produce reports in column format displaying sample information and results. By specifying the search criteria, selective datasets can be produced.

2. Composite Details
   Certificate of results and composite data can be displayed or recalled from the database using the Composite Details form. Any modifications to the data can also be made from this screen.

   Any modifications to the data contained in the database are permanent. Original data can only be restored by reinstalling the database.

3. Individual Sample Details
   This form can be used to view sampling information about each individual sample that made up a composite. Any modifications to the data can also be made from this screen.

4. Close Window.
   This option closes the current menu screen and returns control of the application to the Microsoft Access menu system. The startup menu can be re-opened by double-clicking on **FrmIntroduction** on the **Form** tab or by exiting Access and restarting the Organochlorines Programme Environmental Survey database.

From Microsoft Access, the user can view individual forms, or existing queries and use Microsoft Access' report writer to construct presentation style reports.

4.1 Query Builder

The Query Builder allows the user to create complex cross-tab queries from the Organochlorines Programme Environmental Survey dataset. An example of the Query Builder screen is shown in Figure 4.2.

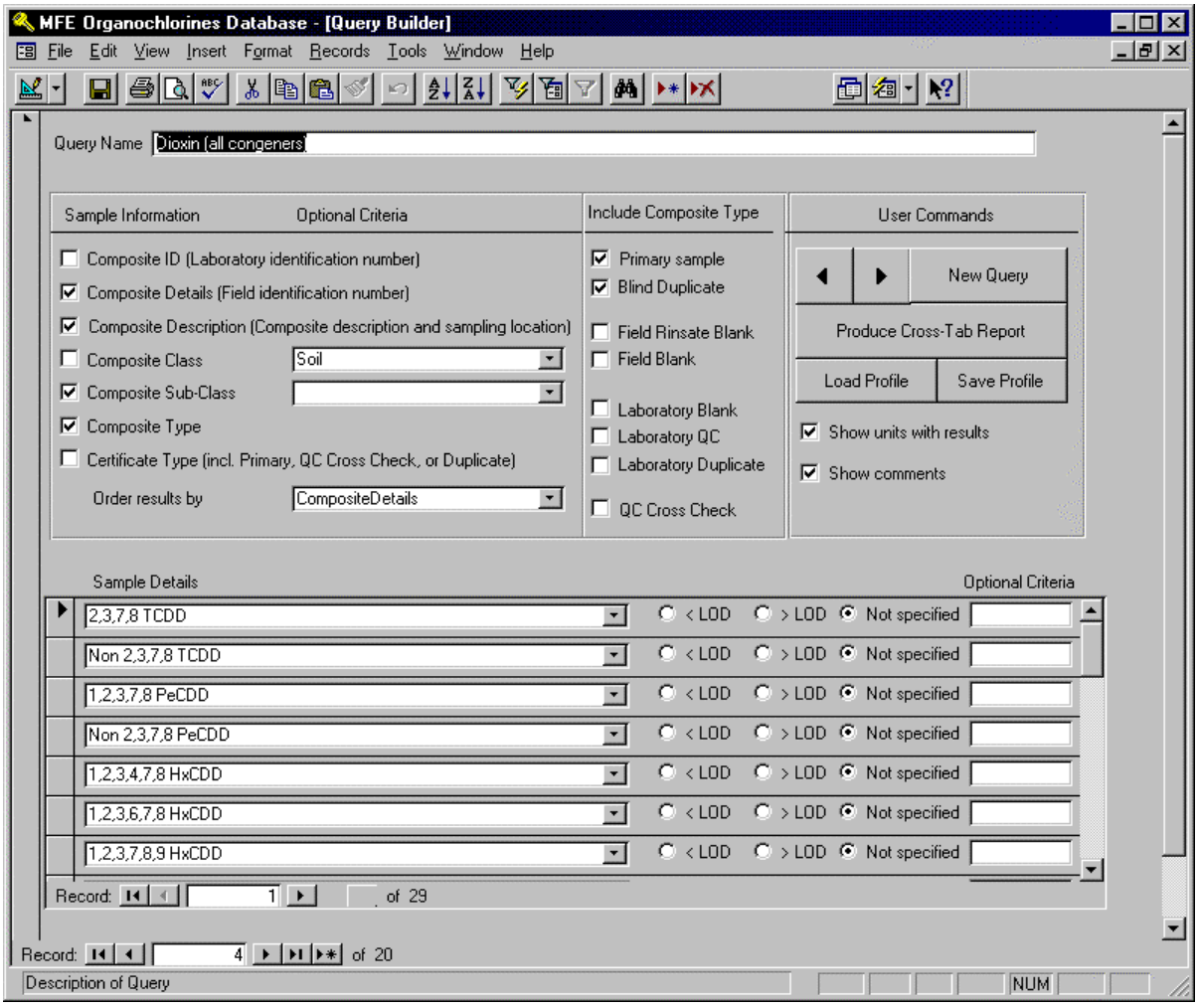
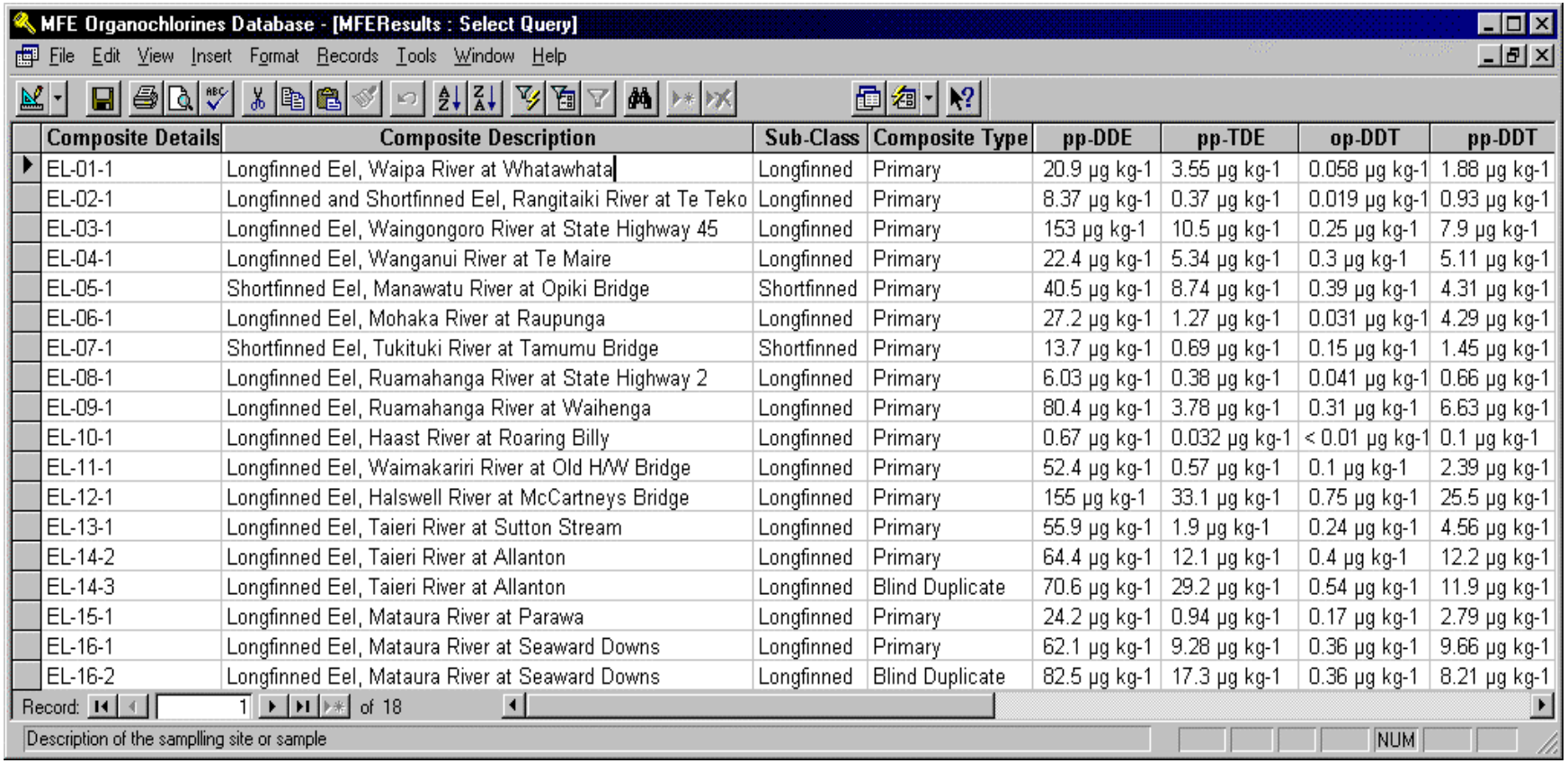


Figure 4.2 Query Builder screen

The Query Builder produces cross-tab reports in a column format showing the composite or sample information and the result data. An example of a report is shown in Figure 4.3.



Composite Details	Composite Description	Sub-Class	Composite Type	pp-DDE	pp-TDE	op-DDT	pp-DDT
EL-01-1	Longfinned Eel, Waipa River at Whatawhata	Longfinned	Primary	20.9 µg kg-1	3.55 µg kg-1	0.058 µg kg-1	1.88 µg kg-1
EL-02-1	Longfinned and Shortfinned Eel, Rangitaiki River at Te Teko	Longfinned	Primary	8.37 µg kg-1	0.37 µg kg-1	0.019 µg kg-1	0.93 µg kg-1
EL-03-1	Longfinned Eel, Waingongoro River at State Highway 45	Longfinned	Primary	153 µg kg-1	10.5 µg kg-1	0.25 µg kg-1	7.9 µg kg-1
EL-04-1	Longfinned Eel, Wanganui River at Te Maire	Longfinned	Primary	22.4 µg kg-1	5.34 µg kg-1	0.3 µg kg-1	5.11 µg kg-1
EL-05-1	Shortfinned Eel, Manawatu River at Opiki Bridge	Shortfinned	Primary	40.5 µg kg-1	8.74 µg kg-1	0.39 µg kg-1	4.31 µg kg-1
EL-06-1	Longfinned Eel, Mohaka River at Raupunga	Longfinned	Primary	27.2 µg kg-1	1.27 µg kg-1	0.031 µg kg-1	4.29 µg kg-1
EL-07-1	Shortfinned Eel, Tukituki River at Tamumu Bridge	Shortfinned	Primary	13.7 µg kg-1	0.69 µg kg-1	0.15 µg kg-1	1.45 µg kg-1
EL-08-1	Longfinned Eel, Ruamahanga River at State Highway 2	Longfinned	Primary	6.03 µg kg-1	0.38 µg kg-1	0.041 µg kg-1	0.66 µg kg-1
EL-09-1	Longfinned Eel, Ruamahanga River at Waihenga	Longfinned	Primary	80.4 µg kg-1	3.78 µg kg-1	0.31 µg kg-1	6.63 µg kg-1
EL-10-1	Longfinned Eel, Haast River at Roaring Billy	Longfinned	Primary	0.67 µg kg-1	0.032 µg kg-1	< 0.01 µg kg-1	0.1 µg kg-1
EL-11-1	Longfinned Eel, Waimakariri River at Old H/W Bridge	Longfinned	Primary	52.4 µg kg-1	0.57 µg kg-1	0.1 µg kg-1	2.39 µg kg-1
EL-12-1	Longfinned Eel, Halswell River at McCartneys Bridge	Longfinned	Primary	155 µg kg-1	33.1 µg kg-1	0.75 µg kg-1	25.5 µg kg-1
EL-13-1	Longfinned Eel, Taieri River at Sutton Stream	Longfinned	Primary	55.9 µg kg-1	1.9 µg kg-1	0.24 µg kg-1	4.56 µg kg-1
EL-14-2	Longfinned Eel, Taieri River at Allanton	Longfinned	Primary	64.4 µg kg-1	12.1 µg kg-1	0.4 µg kg-1	12.2 µg kg-1
EL-14-3	Longfinned Eel, Taieri River at Allanton	Longfinned	Blind Duplicate	70.6 µg kg-1	29.2 µg kg-1	0.54 µg kg-1	11.9 µg kg-1
EL-15-1	Longfinned Eel, Mataura River at Parawa	Longfinned	Primary	24.2 µg kg-1	0.94 µg kg-1	0.17 µg kg-1	2.79 µg kg-1
EL-16-1	Longfinned Eel, Mataura River at Seaward Downs	Longfinned	Primary	62.1 µg kg-1	9.28 µg kg-1	0.36 µg kg-1	9.66 µg kg-1
EL-16-2	Longfinned Eel, Mataura River at Seaward Downs	Longfinned	Blind Duplicate	82.5 µg kg-1	17.3 µg kg-1	0.36 µg kg-1	8.21 µg kg-1

Figure 4.3 Cross-tab report produced from the Query Builder

The query that each user creates is automatically saved by the database. The arrow buttons that appear in the User Command section can be used to scroll through the list of previously created queries.

New queries are added by clicking on the New Query button.

4.1.1 Construction of a query

Queries are created in three steps. These are:
1. specifying composite sample information,
2. selecting the type of analytical data for the query, and
3. adding parameters wanted in the query.

Composite Sample Information

At least one column in the cross-tab report must contain information about the composite sample. Composite sample information is listed in the Sample Information section of the Query Builder. To select the information to appear in the report, click on the appropriate tick box.

The results that are returned in a cross-tab report may be filtered by specifying the particular sample information for which results are required. The criteria for selecting samples are entered into the edit boxes in the Sample Information section.

Results can be sorted or grouped by selecting the field from which the results will be ordered.

Selection of Analytical Data

The database contains results from a number of different types of composite samples (Composite Type). The list of Composite Type is given below.

Primary Sample	Ordinary sample, including QC cross-check sample and the average results from laboratory duplicate analyses.
Blind Duplicate	Blind duplicate sample (this also includes the related primary sample)
Field Rinsate Blank	Field quality control sample
Field Blank	Field quality control sample
Laboratory Blank	Laboratory quality control sample
Laboratory QC	Laboratory quality control sample.

The database also contains results for:

Laboratory Duplicate	Sample analysed in duplicate. The results from both analyses are reported. Note, the average of the two duplicates is considered a primary sample
QC Cross-check	Sample analysed by an independent QC laboratory.

Users can select what Composite Type are, or are not, included in each cross-tab report. These are selected from the list that appears in the Include Composite Type section of the Query Builder.

Selecting Blind Duplicate will produce results in the final query from blind duplicate samples AND their corresponding primary samples.

Sample Details

The Sample Details section of the Query Builder is used to select result data for the particular parameters that the user wishes to see in their cross-tab report. The set of sample details is referred to as a 'profile'. There is no limit to the number of result types that make up a profile. The user may also apply criteria to their selection.

Sample details are selected from a drop-down list of parameters which appears when the user clicks on the t button (located at the end of each row in the Sample Details column). Additional rows are added automatically to this section as required so that more than one sample parameter can be added.

Sample details can be deleted from a list. To delete sample details from a list, the entire row must be selected by clicking on the left-most column (this column contains the '*' and '>' symbols). The row is then deleted by pressing the delete key.

Each value has associated with it a limit of detection (LOD) field. If the result obtained by the analysing laboratory is less than what can be reliably determined, the concentration or value is reported as being below the limit of detection. In these instances the LOD field will contain a '<' symbol and the value reported is the laboratory's limit of detection. By specifying **< LOD,** only values that are reported as a limit of detection will be displayed. Similarly, by specifying **> LOD,** only values that are greater than the limit of detection will be displayed.

The LOD field is not used for all sample results; ie, limits of detection do not apply to some attributes such as toxic equivalents (TEQ), surrogate recoveries and biometric data. Specifying search criteria using the LOD flag in such cases may return an empty dataset or return an error in the application.

To filter the results more precisely, specific criteria can be specified in the Optional Criteria column of the Sample Details section of the Query Builder. Criteria can be specified where a measurement (eg, concentration) is equal to, less than, or greater than a certain value. An example is given below.

Sample Details	Optional Criteria
1234678 HpCDD	> 4.6
Aldrin	= 4.6
PCB#77	< 1

In this example, only samples whose values match these criteria will appear in the cross-tab report; ie, sample results are returned only if the 1234678 HpCDD concentration is > 4.6 **AND** the aldrin concentration = 4.6 **AND** the PCB#77 concentration is < 1.

Profiles

Profiles can be saved so that they can be quickly appended to any query that the user may be creating.

The user can save and load profiles using the buttons found on the Query Builder form. The save profile command saves the current list of sample details appearing in the Query Builder. The load profile command appends the selected profile to the current query being edited.

To erase a profile, select load profile, select the profile name from the list and click on the delete button that appears in the dialogue box.

Displaying the cross-tab query

To display the cross-tab report once all query details have been entered, click the Produce Cross-Tab Report button located in the User Commands section of the form.

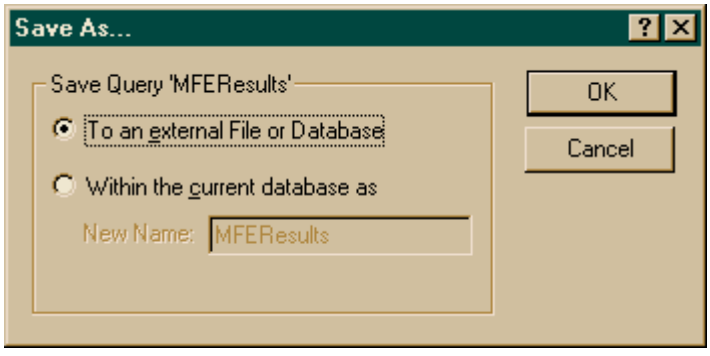
There are two additional options that can be selected before the report is constructed. By specifying either 'Show units with results' or 'Show comments' the cross-tab report will add the appropriate units and/or any appropriate comments to each result. The comments field will normally include remarks on how the results are reported, for example on an as received basis, dry weight basis or whole body weight.

Three queries are used to generate the final dataset. The first query (MfEQuery) produces the set of results that match the search criteria specified in the Sample Details section. The second query formats this data in a cross-tab report (MfECrosstabquery). Sample details are then appended to this data to produce the final query (MfEResults).

4.1.2 Exporting data to Excel

The data produced in a cross-tab report can be exported in a variety of different formats. One of the most useful of these is as an Excel file, as this allows further processing of the raw data within an Excel spreadsheet. To save the cross-tab report as an Excel file:

1. Display the results of the query on the screen
2. From the Access menu bar, select File \ Save As to raise the following dialogue box



3. By selecting ‘Save Query to an external File or Database’ the user can then specify the file format and filename from a window similar to that shown in Figure 4.4.

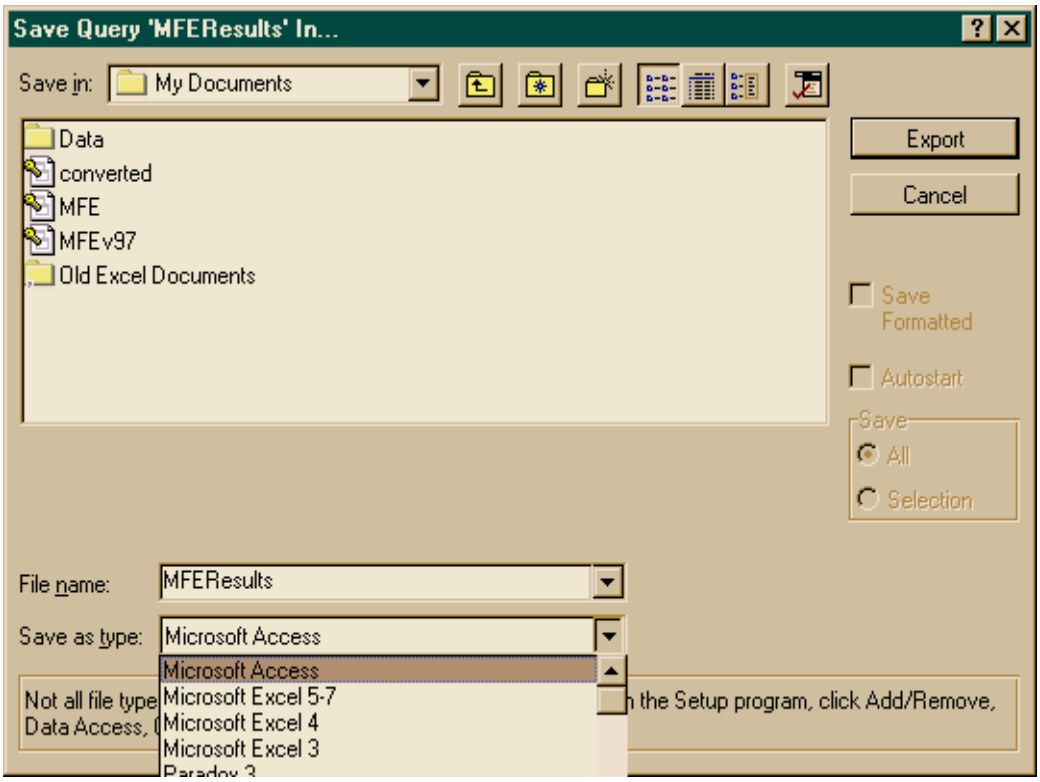


Figure 4.4 Dialogue box to save a cross-tab report to an external file or database

All the data entries (including numbers) exported from the database are exported in text fields. This is the result of concatenating the LOD and value fields. In Excel, the data can be converted into numerical values by referencing the exported data using formulas (eg, = if(isvalue(b1),value(b1),b1)).

4.1.3 Troubleshooting queries

If the query fails to function, ensure that a Query Name has been given (the query will not function unless this field contains at least one character), and that at least one box is ticked in the Sample Information and Include Composite Type sections of the Query Builder.

If the specified search criteria are made too specific, the query may produce an empty dataset (ie, no samples were found matching the selected criteria) or produce a dataset containing one or more empty columns in the report. In the latter instance, the application may return an error. Access does not have the ability to create cross-tab reports containing empty columns.

If this error occurs, remove one or more of the search parameters associated with the sample details, and retry the query. In most instances this error is usually the result of improperly constructed queries .

4.2 Composite Details

The Composite Details form allows the user to retrieve information about each composite sample, associated certificates and results. An example of the Composite Details form is shown in Figure 4.5.

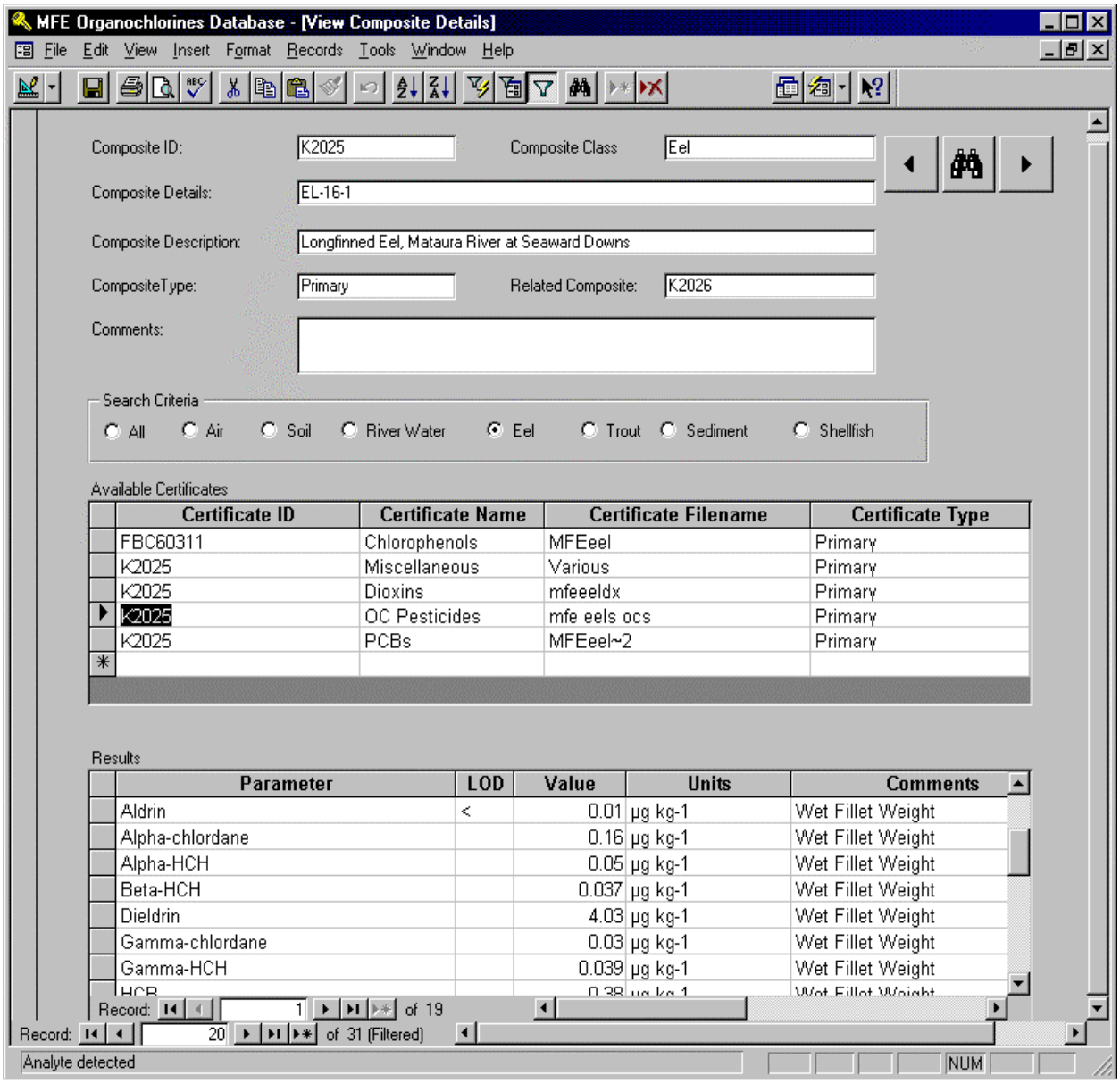


Figure 4.5 Composite Details form

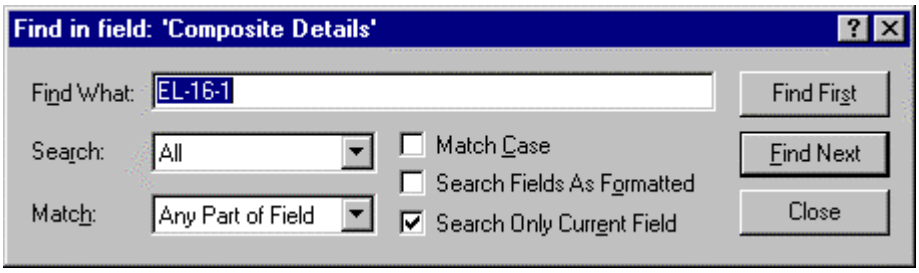
The form is divided into four sections. Composite information is shown in the top section of the form. Below this, there is a Search Criteria section. Here criteria can be set that will specify the type of environmental media (ie, air, soil, river water, eel, trout, sediment, shellfish) that are searched within the database.

Below the Search Criteria section, the Available Certificates section lists all the certificates issued for the selected composite sample. Results for the currently selected certificate (indicated by a ' ▶ ' symbol in the left-hand column of the Available Certificates section) are displayed in the Results section in the bottom half of the form. Results from other certificates are selected by clicking on the relevant certificate name in the CertificateID column of the Available Certificates section.

4.2.1 To search for a particular composite sample

To search for a particular composite sample, use the Microsoft Access search facilities. The procedure is given below:

1. Click on the particular field that is to be searched (eg, Composite Details)
2. Click on the binoculars icon to bring up the following search window



3. Enter in the search criteria (eg, EL-16-1)
4. Ensure that under the **Match** heading the text reads 'Any Part of Field'. (Using this selection, the application will search for the closest match rather than an exact match.)
5. Click **Find First** or **Find Next.**

4.2.2 Modifying data

All the data shown in this form is modifiable by the user.

The database does not have an audit trail facility. Once values or information are changed, the original data is not retrievable. Original data can only be restored by reinstalling the database.

4.3 Individual Sample Details

The Individual Sample Details form is shown in Figure 4.6. This form reports data collected about individual samples (eg, sampling dates, sampling locations, soil type, moisture content, biometric data) that were combined to create composite samples for organochlorine analysis Note that the database does not contain an exhaustive set of information about individual samples.

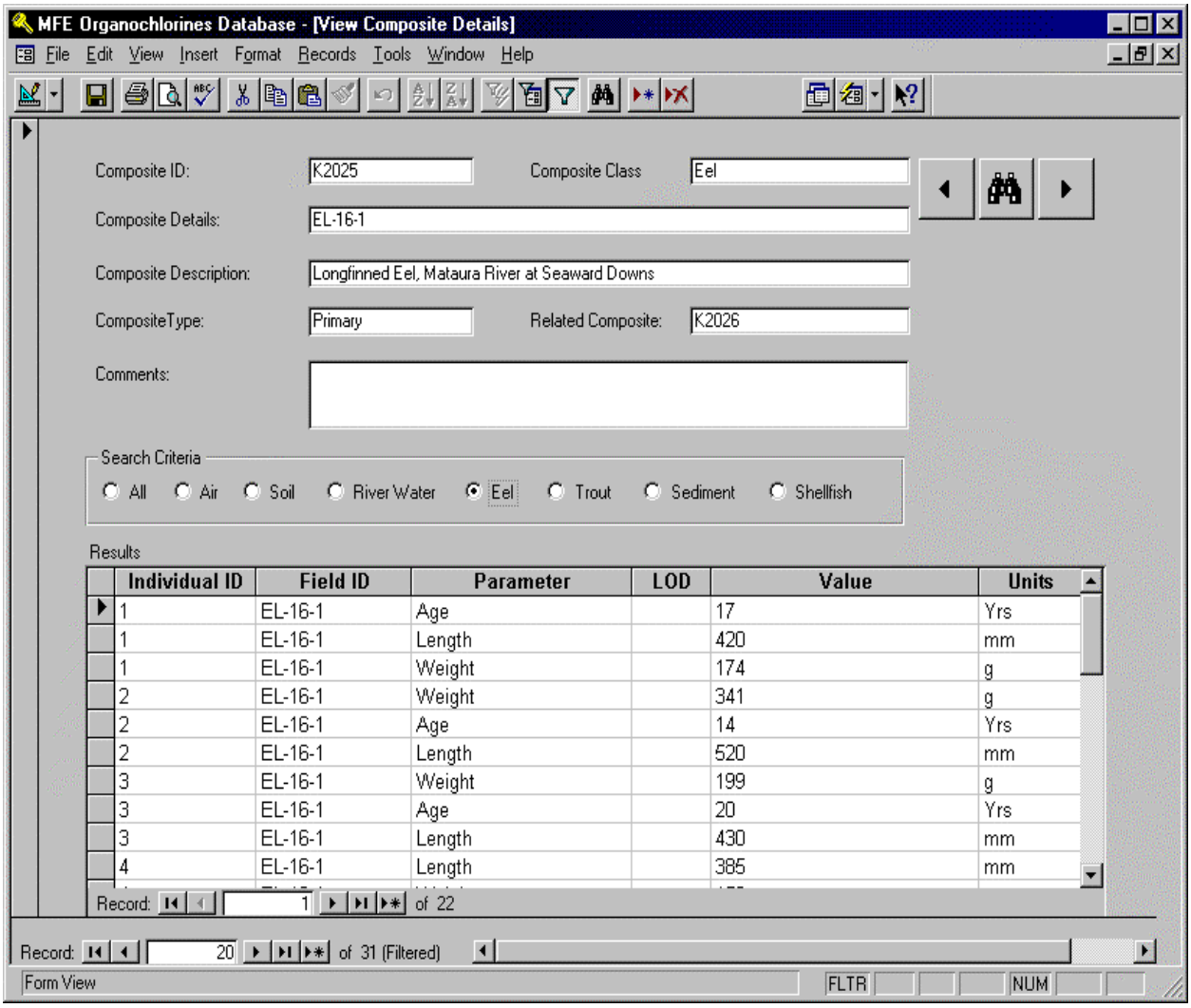


Figure 4.6 Individual Sample Details form

4.3.1 To search for a particular individual sample

To search for a particular individual sample, use the Microsoft Access search facilities. The procedure is described in Section 4.2.1.

4.3.2 Modifying data

All the data shown in this form is modifiable by the user.

The database does not have an audit trail facility. Once values or information are changed, the original data is not retrievable. Original data can only be restored by reinstalling the database.

5 References

Buckland, SJ, Ellis, HK, Salter, RT, 1998a. *Organochlorines in New Zealand: Ambient concentrations of selected organochlorines in soils.* Ministry for the Environment, Wellington, New Zealand.

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