WASHINGTON RIVERS INFORMATION SYSTEM

DATA STRUCTURE STANDARDS FOR

REACH DATA

JANUARY 1990

FILE NAME: RIVERS.DBF
FILE CONTENTS: Contains the following information:

1. River reach coding schemes (i.e. numerical definitions of each reach) and river name. Some codes are normalized and are located in separate files because of one:many relationships (REACH DEFINITION)
2. Data that describes the reach in terms of geography (REACH GEOGRAPHY)
3. Data on the physical characteristics of the reach (PHYSICAL CHARACTERISTICS)
4. Data on factors that affect management of the reach (REACH MANAGEMENT)
5. Summary resource values (REACH RESOURCES)

NOTE: NWRIS coordinators prefered to house all the following data in a single data file. Because of the size of this file (355 columns of data with 48 items), the decision if however flexible and this file can be broken into logical sub files.

FIELD NAME	TYPE	LENGTH	DESCRIPTION
REACH DEFINITION:			
RRN	C	17	EPA River Reach Number
RIVNAME	C	30	Name of river, stream or open body of water
STREAM_NO	N	5	Unique number for all reaches of a stream/river (NPPC derived)
SEQNO	N	7.2	Number which orders reaches hydrologically, from the mouth of the subbasin upstream (NPPC derived)
REACH GEOGRAPHY:			
LOBOUND	C	30	Lower boundary river name
UPBOUND	C	30	Upper boundary river name
TRIB_OF	C	30	Name of stream that the reach flows into
DOWNLINK	C	17	RRN of downstream reach
UPLINK1	C	17	RRN of upstream along mainstem
UPLINK2	C	17	RRN of upstream tributary
UPLINK3	C	17	RRN of other upstream trib.
NPPCBASIN	N	3	NPPC Basin Code (see BASIN.DBF for basin names)

QUAD100K	C	5	First five letters of the 100K Quad Name of the downstream confluence
QUAD24K	C	20	24K Quad Name of the downstream confluence
STCO1	N	5	First FIPS code for State+County
STCO2	N	5	Second "
STCO3	N	5	Third "
STCO4	N	5	Fourth "
STATEFLG	L	1	T/F flag indicating if a reach occurs totally the state of interest. ST is substituted with state abbrevs eg. OR in Oregon
DLAT	N	7.4	Downstream Latitude
DLONG	N	8.4	Downstream Longitude
DTRS	C	12	Downstream Legal Description using format in the 'Data Item Description Manual' for NWHS.

PHYSICAL CHARACTERISTICS:

LENGTH	N	5.2	RRN Length in Miles
WIDTH	N	4	RRN Width in Feet
LEVEL	C	1	EPA Hierarchical relationship between streams
STRORDER	N	1	Stream order for 100K data
TYPE	C	1	EPA reach type for 250K data can eliminate after conversion to 100K
100KTYPE	C	3	Reach type for 100K data
REACH_KEY	C	1	EPA update status
STREAM_KEY	C	1	Reach position within a stream
REACH_FLAG	L	1	Transport reach flag
OW_FLAG	L	1	Open water reach flag
SINUOSITY	N	5.2	USGS straight line length/actual len.
FLOW	Someone else is assembling standards for flow data, but maybe it should be located here		

REACH MANAGEMENT:

REGION	C	1	State Wildlife Agencies Region Code
OWNERSHIP	?	?	Landownership classification
PROT_CAT	C	1	NPPC Protected Areas Designation
PROT_LEN	N	4.1	NPPC Protected Length
FERC_FLAG	L	1	TRUE for a past or present FERC project
IC_FLAG	L	1	TRUE for an institutional constraint that restricts development e.g. Wild & Scenic River. See IC.DBF for details

RESOURCE SUMMARY:

NUMSPP	N	1	Number of anadromous fish present
RF_VAL	N	1	Resident Fish summary value
WL_VAL	N	1	Wildlife summary value
NF_VAL	N	1	Natural Features summary value
RC_VAL	N	1	Recreation summary value
IC_VAL	N	1	Institutional Constraints summ. value
CH_VAL	N	1	Cultural/Historical summary value
REV_DATE	D	8	Revision Date
REV_WHO	C	15	Revision Source e.g. Agency abbrev:last name

CODING SCHEMES USED

FIELD NAME	CODES	DESCRIPTION

TYPE (250K EPA REACH DATA)

TRANSPORT REACHES

- A Artificial Lake Reach - An artificial reach within a lake or reservoir inserted in the file to provide connection between input and output reaches of the open water.
- B Bi-directional Reach - A reach for which the direction of flow is ambiguous.
- D Dam Reach (a reach which is a dam through which water flows) - A reach which is a dam through which water flows. Its primary and open water names are the same as for next reach upstream on same level.
- E Entry Reach - A reach which receives flow from Canada or Mexico
- F Falls Reach - A reach which is either a waterfall, drop spillway, or a reach of rapids.
- M Artificial Open Water Reach - An artificial reach within any open water, other than a lake or reservoir, to provide connection between input and output reaches of the open water.
- N Non-connected Reach - A reach not having codes to link it to other reaches.
- R Regular Reach - A reach which has upstream and downstream reaches connected to it and which is not classified as another type of reach.
- S Start Reach - A headwater reach which has no reaches above ite in the reach file. This type of reach has either one or two reaches connected to its downstream end.
- T Terminal Reach - A reach downstream of which there is no other reach. This type of reach has either on or two reaches connected to its upstream end.

V Open Water Terminal Reach - A reach which is both a terminal reach and an artificial open water reach.
X Terminal Start Reach - A reach which is both a terminal reach and a start reach.
Z Terminal Entry Reach - A reach which is both a terminal reach and an entry reach.

NON-TRANSPORT REACHES (Shoreline reaches)

C Continental Shoreline Segment
G Great Lakes Shoreline Segment
I Island Shoreline Segment
L Lake Shoreline Segment - A segment which follows the shoreline of a lake other than the Great Lakes.
W Wide-River Shoreline Segment

100KTYPE

AR	ARTIFICIAL WATER TRANSPORT
CH	CHANNEL IN WATER
OW	OPEN WATER (RES., LAKE, POND)
SH	SHORELINE
STD	DRY STREAM
STE	EPHEMERAL STREAM
STI	INTERMITTENT STREAM
STP	PERENNIAL STREAM
WL	WETLAND

REACH-KEY

O Original - Unchanged EPA reach
B Base - The downstream end of an original reach that has been split - this reach retains all the original attributes of the reach before it was split (i.e. Length, Latitude, Longitude, Pathmile, etc)
S Split - the reaches created by the splitting of an original reach be one or more added reaches
A Added - An (n+1) reach (all new reaches of a stream which flows into an existing reach)
C Added - An (n+2) reach (all new reaches of a stream which flows into a n+1 reach
D Added - An (n+3) reach (all new reaches of a stream which flows into a n+2 reach
E Added - An (n+4) reach (all new reaches of a stream which flows into a n+3 reach
F Added - An added reach that has no downlink
Z Added or Changed - A reach that has been added or changes that does not conform to EPA update standards

STREAM-KEY

H Start - The uppermost reach of a stream, similar to the EPA 'TYPE=S' for headwater reaches but includes starting reaches of streams formed by the confluence of two other streams
T Terminal - The lowermost reach of a stream, similar to the EPA 'TYPE=T' for Terminal reaches but includes stream reaches which end a stream by flowing into another stream

X Start/End - A single reach stream which both begins and ends the stream
R Regular - A reach of a stream that is between the start and end reach of that stream

OWNERSHIP TO BE DETERMINED

PROT_CAT	A	ANADROMOUS FISH ONLY
	B	RESIDENT FISH & WILDLIFE
	C	ANADROMOUS FISH AND RESIDENT FISH AND WILDLIFE
	D	ANADROMOUS FISH AND RESIDENT FISH OR WILDLIFE
	F	RESIDENT FISH ONLY
	U	UNPROTECTED
	W	WILDLIFE ONLY
	Z	ALREADY PROTECTED AS A WILD & SCENIC AREA OR WILDERNESS AREA

ALL RESOURCE SUMMARY VALUES:

1	Outstanding Value
2	Substantial Value
3	Moderate Value
4	Limited Value
5	No Value
0	Unknown

FILE NAME: HABITAT.DBF

FILE CONTENTS: Contains data on habitat characteristics along or in the reach. This item list contains habitat attributes collected for WDW's resident fish data update. Other habitat description data from other states needs to be added here. Although much of the habitat data is collected with a specific resource in mind (e.g. resident fish) that information is applicable to other resource categories and should be centrally located.

FIELD NAME	TYPE	LENGTH	DESCRIPTION
RRN	C	17	EPA River Reach Number
GRADIENT	N	1	Gradient Range
SUBSTRAT	N	1	Channel Substrate
INCOVER	N	1	Amount of instream cover
RIPCOVER	N	1	Amount of riparian cover
H2OQUAL	N	1	Water quality limiting factors
HABSENS	L	1	High sensitivity flag to upland habitat impacts

add fields from other states

CODING SCHEMES

FIELD NAME	CODES	DESCRIPTION
GRADIENT	1	>4% GRADIENT
	2	1%-4%
	3	<1%
	0	Unknown
SUBSTRAT	1	CHANNEL MATERIAL PREDOMINATELY BOULDERS & RUBBLE
	2	CHANNEL MATERIAL PREDOMINATELY RUBBLE & GRAVEL
	3	CHANNEL MATERIAL PREDOMINATELY GRAVEL & FINES
	0	Unknown
INCOVER	1	>50%
	2	25% - 50%
	3	<25%
	0	
RIPCOVER	H	>50%
	I	25% - 50%
	L	<25%
H2OQUAL	H	NO LIMITING FACTORS
	I	OCCASION OR MILD LIMITING FACTORS
	L	LIMITING FACTORS PRESENT & ANNUALLY IMPACT FISH POPULATIONS

FILE NAME: WRIAXREF.DBF
FILE CONTENTS: Contains a cross reference of Washington State University, Water Resources Center generated WRIA codes to EPA river reach code.

FIELD NAME	TYPE	LENGTH	DESCRIPTION
RRN	C	17	EPA River Reach Number
WRIA	C	24	WRIA code

FILE NAME: NPPCXREF.DBF
FILE CONTENTS: Contains a cross reference of NPPC reach codes added to the original 1:250,000 scale EPA Reach File to reach codes assigned to the 1:100,000 scale reach data.

FIELD NAME	TYPE	LENGTH	DESCRIPTION
RRN	C	17	EPA River Reach Number
NPPCRRN	C	16	NPPC added reach codes

NOTE: AS MANY CROSS REFERENCE FILES CAN BE ADDED AS NEEDED WITH A SIMILAR FORMAT AS THE TWO ABOVE.

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DATA STRUCTURE STANDARDS FOR

ANADROMOUS FISH

JANUARY 1990

FILE NAME: AF.DBF
FILE CONTENTS: Anadromous fish presence, habitat quality, usage type, and smolt estimation data. Only presence data exists for areas outside the Columbia Basin. Summary fields are included to provide quick access to commonly used information.

FIELD NAME	TYPE	LENGTH	DESCRIPTION
RRN	C	17	EPA River Reach Number
NUMSPP	N	1	Total number of species present
PLANTED_FLG	L	1	TRUE for planted above an impassable barrier
ACCESS_FLG	L	1	TRUE for habitat accessibility to anadromous fish i.e. all areas below an impassable blockage
CHSP	N	4.2	% of reach used by SPRING CHINOOK
CHSU	N	4.2	% of reach used by SUMMER CHINOOK
CHFA	N	4.2	% of reach used by FALL CHINOOK
CHUK	N	4.2	% of reach used by UNKNOWN CHINOOK
COHO	N	4.2	% of reach used by COHO
CHUM	N	4.2	% of reach used by CHUM
SOCK	N	4.2	% of reach used by SOCKEYE
PINK	N	4.2	% of reach used by PINK SALMON
ATSA	N	4.2	% of reach used by ATLANTIC SALMON
STSU	N	4.2	% of reach used by SUMMER STEELHEAD
STWI	N	4.2	% of reach used by WINTER STEELHEAD
STJU	N	4.2	% of reach used by JUVENILE STEELHEAD
STUK	N	4.2	% of reach used by UNKNOWN STEELHEAD
WHST	N	4.2	% of reach used by WHITE STURGEON
GRST	N	4.2	% of reach used by GREEN STURGEON
SMET	N	4.2	% of reach used by SMELT
SHAD	N	4.2	% of reach used by SHAD
DOVA	N	4.2	% of reach used by DOLLY VARDEN
CHSP_HA	N	1	Habitat Quality for SPRING CHINOOK
CHSU_HA	N	1	Habitat Quality for SUMMER CHINOOK
CHFA_HA	N	1	Habitat Quality for FALL CHINOOK
COHO_HA	N	1	Habitat Quality for COHO
STSU_HA	N	1	Habitat Quality for SUMMER STEELHEAD
STWI_HA	N	1	Habitat Quality for WINTER STEELHEAD
CHSP_UT	N	1	Use Type for SPRING CHINOOK
CHSU_UT	N	1	Use Type for SUMMER CHINOOK
CHFA_UT	N	1	Use Type for FALL CHINOOK
COHO_UT	N	1	Use Type for COHO
STSU_UT	N	1	Use Type for SUMMER STEELHEAD

STWI_UT	N	1	Use Type for WINTER STEELHEAD
HSP_SM	N	7	Smolt Estimate for SPRING CHINOOK
CHSU_SM	N	7	Smolt Estimate for SUMMER CHINOOK
CHFA_SM	N	7	Smolt Estimate for FALL CHINOOK
COHO_SM	N	7	Smolt Estimate for COHO
STSU_SM	N	7	Smolt Estimate for SUMMER STEELHEAD
STWI_SM	N	7	Smolt Estimate for WINTER STEELHEAD
COMMENTS	C	50	Special comments
REV_DATE	D	8	Date of last data revision
REV_WHO	C	25	Source of last data revision e.g. AGENCY:LAST NAME

CODING SCHEMES USED

ALL '..._UT' FIELDS (USE TYPES)
1 = SPAWNING AND REARING
2 = REARING ONLY

ALL '..._HA' FIELDS (HABITAT QUALITY)
1 = EXCELLANT
2 = GOOD
3 = FAIR
4 = POOR

ALL '..._SM' FIELDS (SMOLT DENSITY ESTIMATE) Data expressed in smolts/squared meters

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FILE NAME: BLOCK.DBF
FILE CONTENTS: Presence and location of blockages to anadromous fish and a description of blockage types.

FIELD NAME	TYPE	LENGTH	DESCRIPTION
RRN	C	17	EPA River Reach Number
RCHMILE	N	5.2	Reach Mile location of blockage
PASSABLE	L	1	Logical flag for blockage passability ie. T for passable F for impassable
BLOCKTYP	C	3	Type of blockage
REV_DATE	D	8	Date of last data revision
REV_WHO	C	25	Source of last data revision

CODING SCHEMES USED

F = FALLS	T = CULVERT
C = CASCADES	U = UNKNOWN
B = BEAVER DAMS	GB = GRADIENT BARRIER
L = LOG JAMS	P = PIPE
D = DAMS	W = WEIRS
S = SWAMP	SS = SOIL SLUMPS
G = FLOOD GATE	O = FORDS
TH = TRAP & HAUL	H = CHUTES

FILE NAME: PASSAGE.DBF
FILE CONTENTS: Location of passage facilities.

FIELD NAME	TYPE	LENGTH	DESCRIPTION
RRN	C	17	EPA River Reach Number
PASSAGE	L	1	Logical for passage facility
REV_DATE	D	8	Date of last data revision
REV_WHO (AGENCY:LAST NAME)	C	25	Source of last data revision

CODING SCHEMES USED

-none-

FILE NAME: PRODUCTN.DBF
FILE CONTENTS: Location and type of production facilities.

FIELD NAME	TYPE	LENGTH	DESCRIPTION
RRN	C	17	EPA River Reach Number
FACLTYP	C	2	Production facility type
FACLNAME	C	30	Production facility name (WDF)
OPERATOR	C	20	Facility owner/manager (WDF)
LOCATION	C	45	Facility Location (WDF)
WATERSRC	C	35	Water Source (WDF)
REV_DATE	D	8	Date of last data revision
REV_WHO	C	25	Source of last data revision

CODING SCHEMES USED

FIELD NAME	CODE	DESCRIPTION
FACLTYP	HT	Hatchery
	RP	Rearing Pond
	EB	Egg Box
	NT	Net Pens
	SC	Spawning Channels

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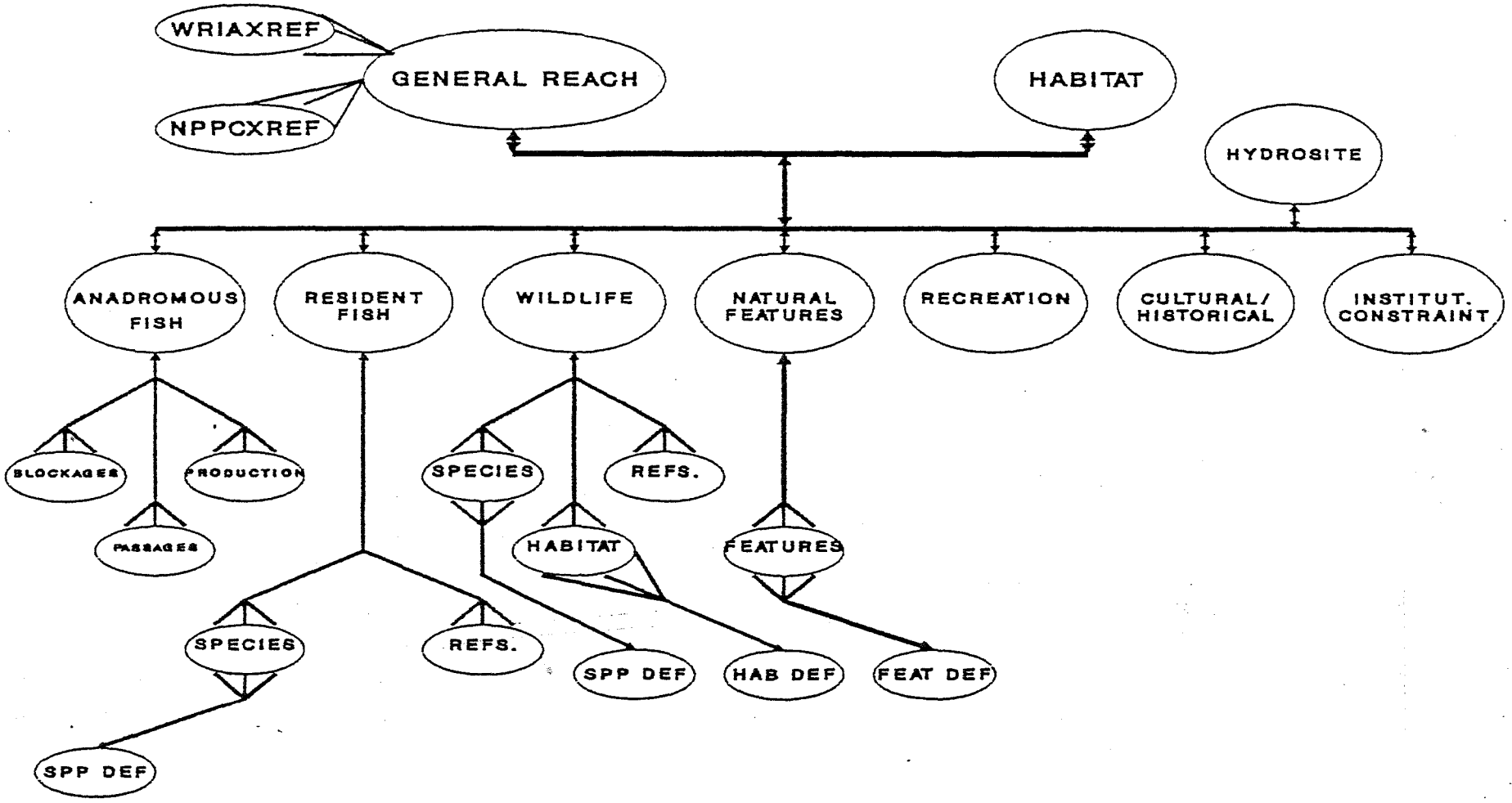
CONCEPTUAL DESIGN OF 1:100,000 SCALE DATA



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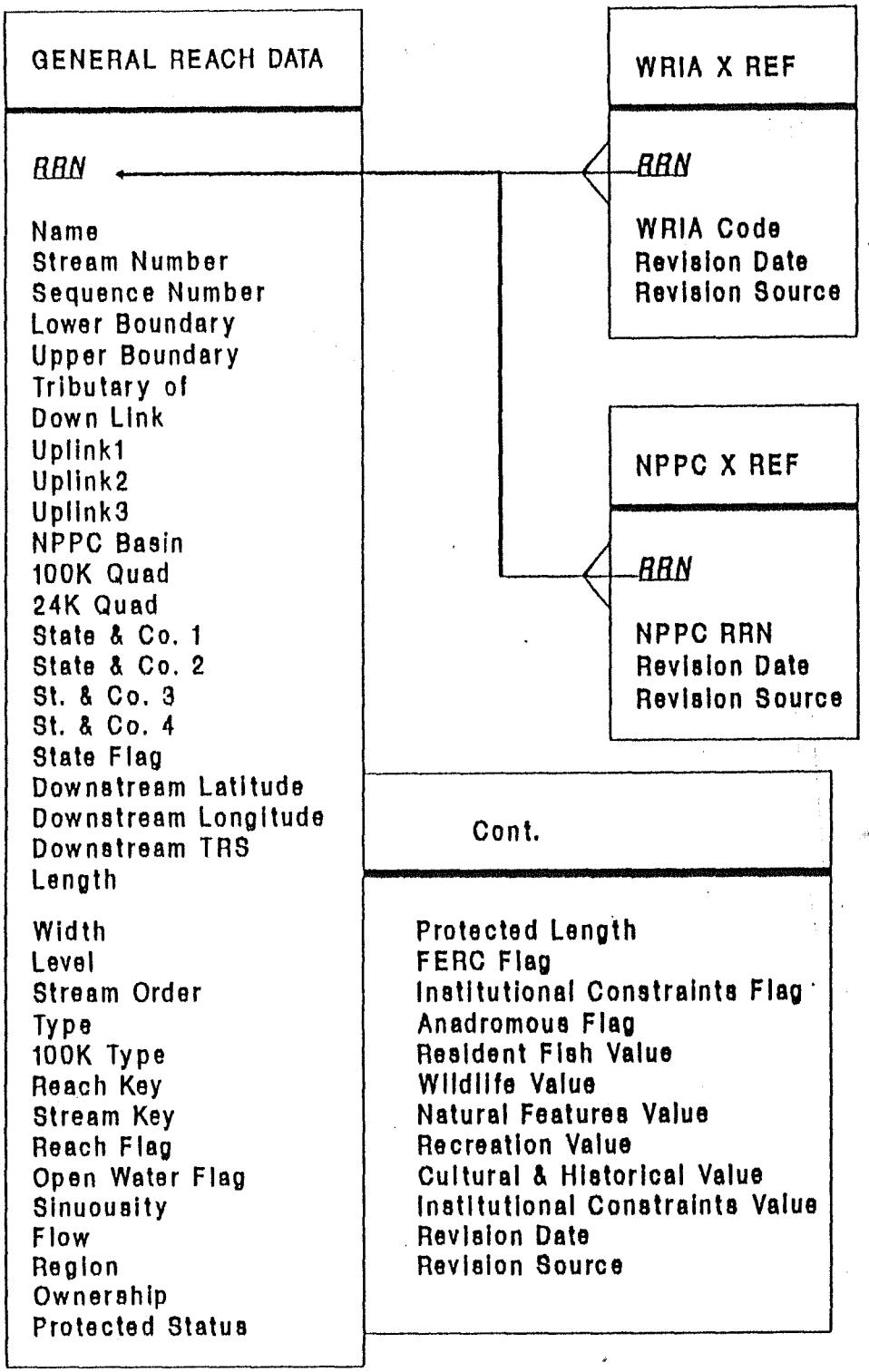
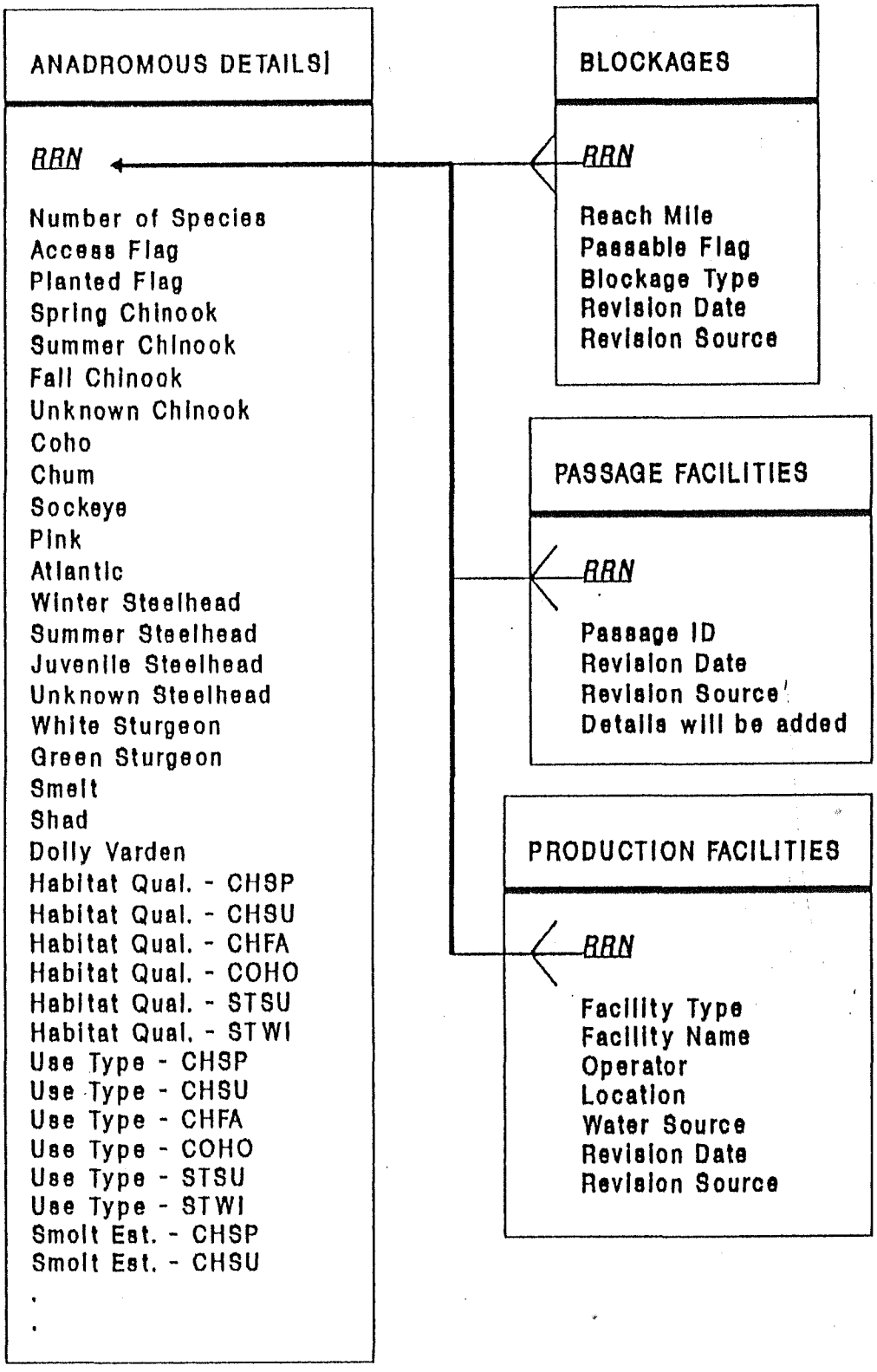
LOGICAL MODEL FOR GENERAL REACH DATA



WASHINGTON RIVERS INFORMATION SYSTEM

LOGICAL MODEL FOR ANADROMOUS FISH DATA



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LOGICAL MODEL FOR HABITAT DATA