APPENDIX A

MONITORING STATIONS

TABLE A-1

PROJECT INFORMATION							
Project Code	River Name	Location of Spill Bays	River Mile	Number of Spill Bays	Number of Power Houses	Number of Units	Hydraulic Capacity, kcfs
BON	Columbia River	Mid-River	146	18	2	18	288
CHJ	Columbia River	Right Bank	545	19	1	27	219
DWR	Clearwater River	Left Bank	1.9	2	1	3	10.5
GCL	Columbia River	Mid-River	596.6	10	3	24	280
IHR	Snake River	Right Bank	9.7	10	1	6	106
JDA	Columbia River	Right Bank	215.62	20	1	16	322
LGS	Snake River	Mid-River	70.3	8	1	6	130
LIB	Kootenai River	Mid-River	221.9	2	1	5	24
LMN	Snake River	Left Bank	41.6	8	1	6	130
LWG	Snake River	Mid-River	107.5	8	1	6	130
MCN	Columbia River	Right Bank	292	22	1	14	232
TDA	Columbia River	Mid-River	191	23	1	22	375

TABLE A-2

Station Name	CROHMS ID	Date Est	River Name	River Mile	Bank	Latitude	Longitude	Project	Quad Map Name	Location Desc	located with USGS?	Maintanence Responsibility	Maintenance Sequence	Calibration Responsibility	Owner
ANQW	1280	1998	Snake River	167.5	Left Bank	46° 05' 50	116° 58' 36	Lower Granite Dam	Limekiln Rapids, Idaho	River	TRUE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
BON	462	1986	Columbia River	146	Right Bank	45° 38' 45	121° 56' 20	Bonneville Dam	Bonneville Dam	Forebay	FALSE	US Geological Survey	Bi-weekly	US Geological Survey	US Army Corps of Engineers, Portland District
CHJ	2512	1984	Columbia River	545	Left Bank	47° 59' 40	119° 38' 37	Chief Joseph Dam	Chief Joseph Dam	Forebay	FALSE	Common Sensing	Bi-weekly	Common Sensing	US Army Corps of Engineers, Seattle District
CHQW	2513	1997	Columbia River	544	Right Bank	48° 00' 17	117° 39' 25	Chief Joseph Dam	Chief Joseph Dam	Tailwater	FALSE	Common Sensing	Bi-weekly	Common Sensing	US Army Corps of Engineers, Seattle District
CIBW	2830	1984	Columbia River	746	Left Bank	490° 00' 3	117° 37' 42	None		River	FALSE	Common Sensing	Bi-weekly	Common Sensing	US Bureau of Reclamation
CWMW	255	1993	Columbia River	122	Right Bank	45° 34' 39	122° 22' 39	Bonneville Dam	Camas	River	FALSE	US Geological Survey	Bi-weekly	US Geological Survey	US Army Corps of Engineers, Portland District
DWQI	1312	1994	North Fork, Clearwater River	0.3	Left Bank	46° 30' 11	116° 19' 18	Dworshak Dam	Ahsahka, Idaho	Tailwater	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
FDRW	1310	1997	Columbia River	597	Mid-River	475° 72' 3	118° 58' 37	Grand Coulee Dam		Forebay	FALSE	Common Sensing	Bi-weekly	Common Sensing	US Bureau of Reclamation
GCGW	2616	1983	Columbia River	591	Left Bank	48° 21' 24	114° 02' 12	Grand Coulee Dam		Tailwater	FALSE	Common Sensing	Bi-weekly	Common Sensing	US Bureau of Reclamation
HGHM	3000	1998	Flathead River	3.5	Right Bank	482° 12' 4	114° 02' 12	Hungry Horse Dam		Tailwater	FALSE	Common Sensing	Bi-weekly	Common Sensing	US Bureau of Reclamation
IDSW	908	1990	Snake River	6.9	Right Bank	43° 14' 32	118° 56' 20	Ice Harbor Dam	Humorist, Washington	Tailwater	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
IHR	916	1984	Snake River	9.7	Mid-River	46° 14' 58	118° 52' 42	Ice Harbor Dam	Levey, & Slater Washington	Forebay	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
JDA	3757	1984	Columbia River	216	Mid-River	45° 42' 57	120° 41' 30	John Day Dam	Rufus	Forebay	FALSE	US Geological Survey	Bi-weekly	US Geological Survey	US Army Corps of Engineers, Portland District
LEWI	1277	1996	Clearwater River	5.4	Right Bank	46° 26' 06	116° 57' 36	None		River	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District

TABLE A-2 (Continued)

Station Name	CROHMS ID	Date Est	River Name	River Mile	Bank	Latitude	Longitude	Project	Quad Map Name	Location Desc	located with USGS?	Maintanence Responsibility	Maintenance Sequence	Calibration Responsibility	Owner
LGNW	1202	1990	Snake River	106.7	Right Bank	46° 39' 58	117° 26' 18	Lower Granite Dam	Almota, Washington	Tailwater	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
LGS	1118	1984	Snake River	70.3	Mid-River	46° 35' 05	118° 01' 32	Little Goose Dam	Starbuck East, Washington	Forebay	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
LGSW	1114	1990	Snake River	69.6	Right Bank	46° 34' 59	118° 02' 31	Little Goose Dam	Starbuck East, Washington	Tailwater	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
LMN	1018	1984	Snake River	41.6	Mid-River	46° 33' 47	118° 32' 14	Lower Monumental Dam	Monumental Dam, Washington	Forebay	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
LMNW	1003	1990	Snake River	40.8	Left Bank	46° 33' 13	118° 32' 51	Lower Monumental Dam	Monumental Dam, Washington	Tailwater	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
LWG	1205	1984	Snake River	107.5	Left Bank	46° 39' 33	117° 25' 30	Lower Granite Dam	Almota, Washington	Forebay	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
MCPW	805	1990	Columbia River	290.6	Right Bank	45° 56' 00	119° 19' 30	McNary Dam	Umatilla, Oregon-Washington	Tailwater	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
MCQO	820	1986	Columbia River	292	Left Bank	45° 55' 58	119° 17' 43	McNary Dam	Umatilla, Oregon-Washington	Forebay	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
MCQW	814	1985	Columbia River	292.1	Right Bank	45° 56' 25	119° 17' 47	McNary Dam	Umatilla, Oregon-Washington	Forebay	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
PAQW	2002	1998	Columbia River	329.5	Left Bank	46° 13' 32	119° 07' 25	McNary Dam	Pasco, Washington	River	FALSE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
PEKI	1308	1996	Clearwater River	37.4	Left Bank	46° 32' 26	116° 23' 31	Dworshak Dam	Southwick, Idaho	River	TRUE	HDR and NWW	Bi-weekly	HDR and NWW	US Army Corps of Engineers, Walla Walla District
TDA	3700	1984	Columbia River	193	Left Bank	45° 37' 12	121° 07' 12	The Dalles	The Dalles South	Forebay	FALSE	US Geological Survey	Bi-weekly	US Geological Survey	US Army Corps of Engineers, Portland District
TDDO	522	1996	Columbia River	189	Left Bank	45° 36' 27	121° 10' 20	The Dalles	The Dalles South	Tailwater	FALSE	US Geological Survey	Bi-weekly	US Geological Survey	US Army Corps of Engineers, Portland District
WRNO	403	1984	Columbia River	140	Left Bank	45° 36' 30	122° 02' 14	Bonneville Dam	Multnomah Falls	Tailwater	FALSE	US Geological Survey	Bi-weekly	US Geological Survey	US Army Corps of Engineers, Portland District

TABLE A-3

GENERATOR AND TURBINE DATA

Powerplant	Units	Type	River, County, State	HP	RPM	Rated Head	Max. Head	Min. Head	KW Name plate rating	max sustaind rating	Rewind Capacity
Bonneville 1	0	Kaplan	Columbia Rr, Multnomah Co, OR	5000	257	50'	70'	32'	4000		
Bonneville 1	1	Kaplan	Columbia Rr, Multnomah Co, OR	66000	75	50'	69'	25.7'	43200	49680	59,400 KVA
Bonneville 1	2	Kaplan	Columbia Rr, Multnomah Co, OR	66000	75	50'	69'	25.7'	43200	49680	54200
Bonneville 1	3-6	Kaplan	Columbia Rr, Multnomah Co, OR	74000	75	60'	69'	25.7'	54000	62100	
Bonneville 1	7-9	Kaplan	Columbia Rr, Multnomah Co, OR	74000	75	60'	69'	25.7'	54000	62100	same
Bonneville 1	2-6, 10	Kaplan	Columbia Rr, Multnomah Co, OR	74000	75	60'	69'	25.7'	54000	62100	69,000 KVA
Bonneville 2	11-14	Kaplan	Columbia Rr, Multnomah Co, OR	105000	69.2	52'	70'	32.5'	66500	66500	
Bonneville 2	15-18	Kaplan	Columbia Rr, Multnomah Co, OR	105000	69.2	52'	70'	32.5'	66500	66500	
Bonneville 2	F1 & F2	Kaplan	Columbia Rr, Multnomah Co, OR	20700	156.5	59'	68'	32.5'	13110	13110	
Bonneville 4,6	4,6	Kaplan	Columbia Rr, Multnomah Co, OR	20700	156.6	59'	68'	32.5	13110	13110	
Chief Joseph	1-4, 15&16.	Francis	Columbia River, Douglas Co, WA	100000	100	165'	178.5'	148'	64000	67368	88270
Chief Joseph	5 - 14	Francis	Columbia River, Douglas Co, WA	100000	100	165'	178.5'	148'	64000	67368	88270
Chief Joseph	17-27	Francis	Columbia River, Douglas Co, WA	136000	112.5	163'	196'	130'	95000	100000	
Chief Joseph	SS 1 & 2	Francis	Columbia River, Douglas Co, WA	3500	514	171'	184'	148'	2400	3000	
Dworshak	1 & 2	Francis	Clearwater Rr, Clearwater Co, ID	142000	200	560'	625'	470'	90000	90000	
Dworshak	3	Francis	Clearwater Rr, Clearwater Co, ID	346000	128.6	560'	615.5'	460.5'	222000	222000	
Ice Harbor	1-3	Kaplan	Snake River, Walla Walla Co, WA	143000	90	89'	105'	78'	94737	94737	
Ice Harbor	4-6	Kaplan	Snake River, Walla Walla Co, WA	174000	85.7	89'	102'	72'	116800	116800	
John Day	1-16	Kaplan	Columbia River, Sherman Co, OR	212400	90	94'	110'	83.5'	135000	155250	
John Day	1-4 Rew'd	Kaplan	Columbia River, Sherman Co, OR	212400	90	94'	110'	83.5'	135000	155250	135000
John Day	6-11 Rew'd	Kaplan	Columbia River, Sherman Co, OR	212400	90	94'	110'	83.5'	135000	155250	135000
John Day	13 Rew'd	Kaplan	Columbia River, Sherman Co, OR	212400	90	94'	110'	83.5'	135000	155250	135000
John Day	15 Rew'd	Kaplan	Columbia River, Sherman Co, OR	212400	90	94'	110'	83.5'	135000	155250	135000

TABLE A-3 (Continued)

GENERATOR AND TURBINE DATA											
Powerplant	Units	Type	River, County, State	HP	RPM	Rated Head	Max. Head	Min. Head	KW Name plate rating	max sustaind rating	Rewind Capacity
Libby	1-4	Francis	Kootenai River, Lincoln Co, MT	165000	128.6	300'	341'	165'	105000	120000	105000
Libby	1-5	Francis	Kootenai River, Lincoln Co, MT	165000	128.6	300'	341'	165'	105000	120000	105000
Little Goose	1-3	Kaplan	Snake River, Columbia Co, WA	212400	90	93'	98'	90.5'	135000	155250	
Little Goose	4-6	Kaplan	Snake River, Columbia Co, WA	212400	90	93'	98'	90.5'	135000	155250	
Lower Granite	1-3	Kaplan	Snake River, Columbia Co, WA	212400	90	93'	105'	76'	135000	155250	
Lower Granite	4-6	Kaplan	Snake River, Columbia Co, WA	212400	90	93'	105'	76'	135000	155250	
Lower Monumental	1-3	Kaplan	Snake River, Walla Walla Co, WA	212400	90	94'	100'	87'	135000	155250	same
Lower Monumental	4-6	Kaplan	Snake River, Walla Walla Co, WA	212400	90	93'	103'	87'	135000	155250	
McNary	1-12	Kaplan	Columbia River, Umatilla Co, OR	111300	85.7	80'	92'	62'	70000	80500	
McNary	13 & 14	Kaplan	Columbia River, Umatilla Co, OR	111300	85.7	80'	92'	62'	70000	80500	73700
McNary	SS 1 & 2	Francis	Columbia River, Umatilla Co, OR	4500	277	80'	92'	62'	3000	3000	
The Dalles	2,4,7,9,11,14	Kaplan	Columbia River, Wasco Co, OR	123000	85.7	81'	90.5'	60'	78000	89000	94,420 KVA
The Dalles	8, 6	Kaplan	Columbia River, Wasco Co, OR	123000	85.7	81'	90.5'	60'	78000	89000	94,420 KVA
The Dalles	1,3,10	Kaplan	Columbia River, Wasco Co, OR	123000	85.7	81'	90.5'	60'	78000	89000	94,420KVA
The Dalles		Kaplan	Columbia River, Wasco Co, OR	123000	85.7	81'	90.5'	60'	78000	89000	
The Dalles	15-22	Kaplan	Columbia River, Wasco Co, OR	136000	80	73'	90'	58'	85975	99000	
The Dalles		Kaplan	Columbia River, Wasco Co, OR	18800	200	74'	88'	55'	13500	14000	
The Dalles	SS 1 & 2	Francis	Columbia River, Wasco Co, OR	4500	277	81'	90.5'	60'	3000	3000	
The Dalles	5 Rew'd	Kaplan	Columbia River, Wasco Co, OR	123800	85.7	81'	90.5'	60'	78000	89000	94,420 KVA
The Dalles	12 Rew'd	Kaplan	Columbia River, Wasco Co, OR	123800	85.7	81'	90.5'	60'	78000	89000	
The Dalles	13 Rew'd	Kaplan	Columbia River, Wasco Co, OR	123800	85.7	81'	90.5'	60'	78000	89000	

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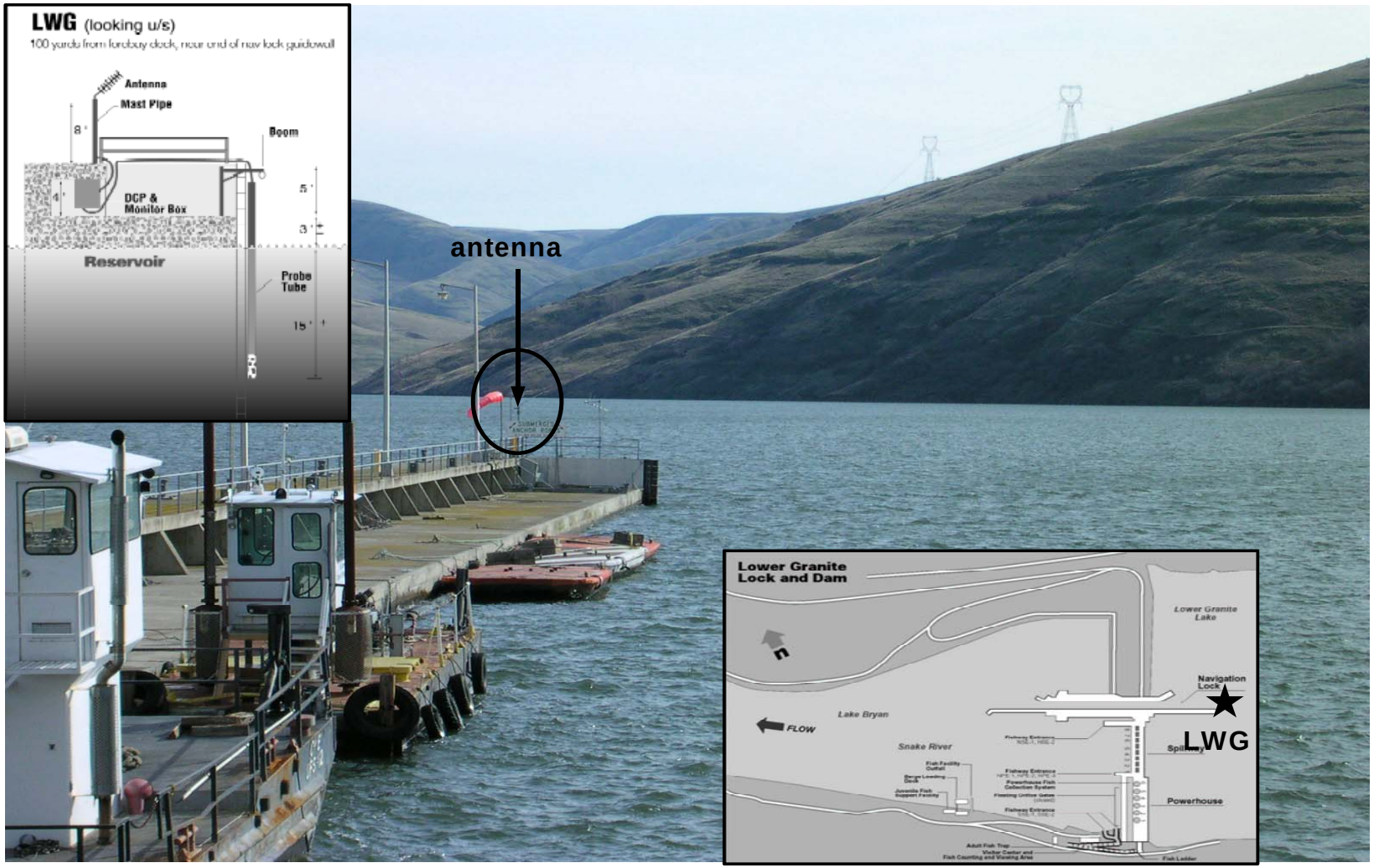
FIGURE A-1

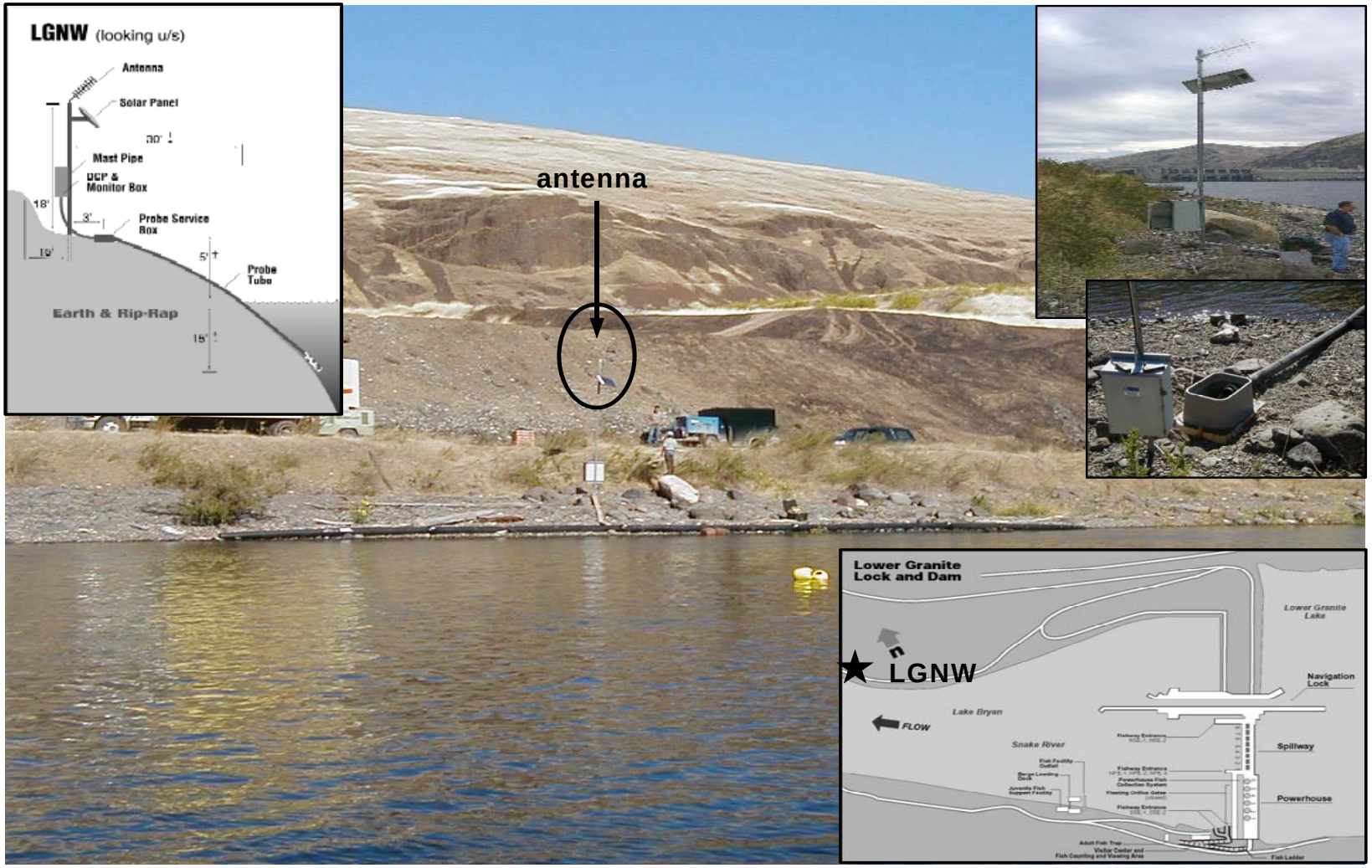
Gas Monitoring Stations
Spill Season Automated Station
Year-Round Automated Station (as recommended by Dissolved Gas Team)
CANADA
U.S.A.
N
SEATTLE
WASHINGTON
IDAHO
OREGON
ASTORIA
PORTLAND
RICHLAND
Columbia River
Cowlitz River
Willamette River
Chelan River & Lake
Wenatchee River
Kettle River
Kootenai River
Pend Oreille River & Lake
Spokane River
Flathead River & Lake
Snake River
Clearwater R.
Boundary CIBW STN 2830 RM 745.0
RM 706.4
Chief Joseph Dam RM 545.1
CHQW STN 2513
CHJ STN 2512
WEL STN 2407
GCGW STN 2516
Grand Coulee Dam RM 596.6
RM 638.9
Wells Dam RM 515.6
FDRW STN 1310
WELW STN 2400
RRH STN 2307
Rocky Reach Dam RM 473.7
RRDW STN 2308
RIS STN 2204
Rock Island Dam RM 453.8
RIGW STN 2205
WAN STN 2100
Wanapum Dan RM 415.8
WANW STN 2104
PRD STN 2007
Priest Rapids Dam RM 397.1
PRXW STN 2004
PAQW STN 2002 RM 329.2
Ice Harbor Dam RM 9.7
IDSW STN 908
IHR STN 916
Lower Monumental Dam RM 41.6
LMN STN 1018
LMNW STN 1003
LGNW STN 1202
Lower Granite Dam RM 107.5
Little Goose Dam RM 70.3
LGS STN 1118
LGSW STN 1114
LWG STN 1205
LEWI STN 1277
Dworshak Dam RM 41.0
PEKI STN 1308
DWQI STN 1312
ANQW STN 1280 RM 167.2
Hells Canyon Dam RM 247
Oxbow Dam RM 273
Brownlee Dam RM 285
Hungry Horse Dam RM 5.2
HGHM STN 3000
LIBM STN 2900
Libby Dam RM 221.9
Camas/Washougal CWMW (STN 255) RM 122.0
Bonneville Dam RM 146.1
BON STN 462
TDDO STN 522
JHAW STN 711
John Day Dam RM 215.6
JDA STN 3757
TDA STN 3700
The Dalles Dam RM 191.5
Warrendale WRNO STN 403 RM 140.0
MCPW STN 805
McNary (WA) MCQW STN 814
McNary (OR) MCQO STN 820
McNary Dam RM 292.0
2003
Dissolved Gas
Monitoring Network
40 20 0 40 80
APPROXIMATE SCALE IN MILES

FIGURE A-2



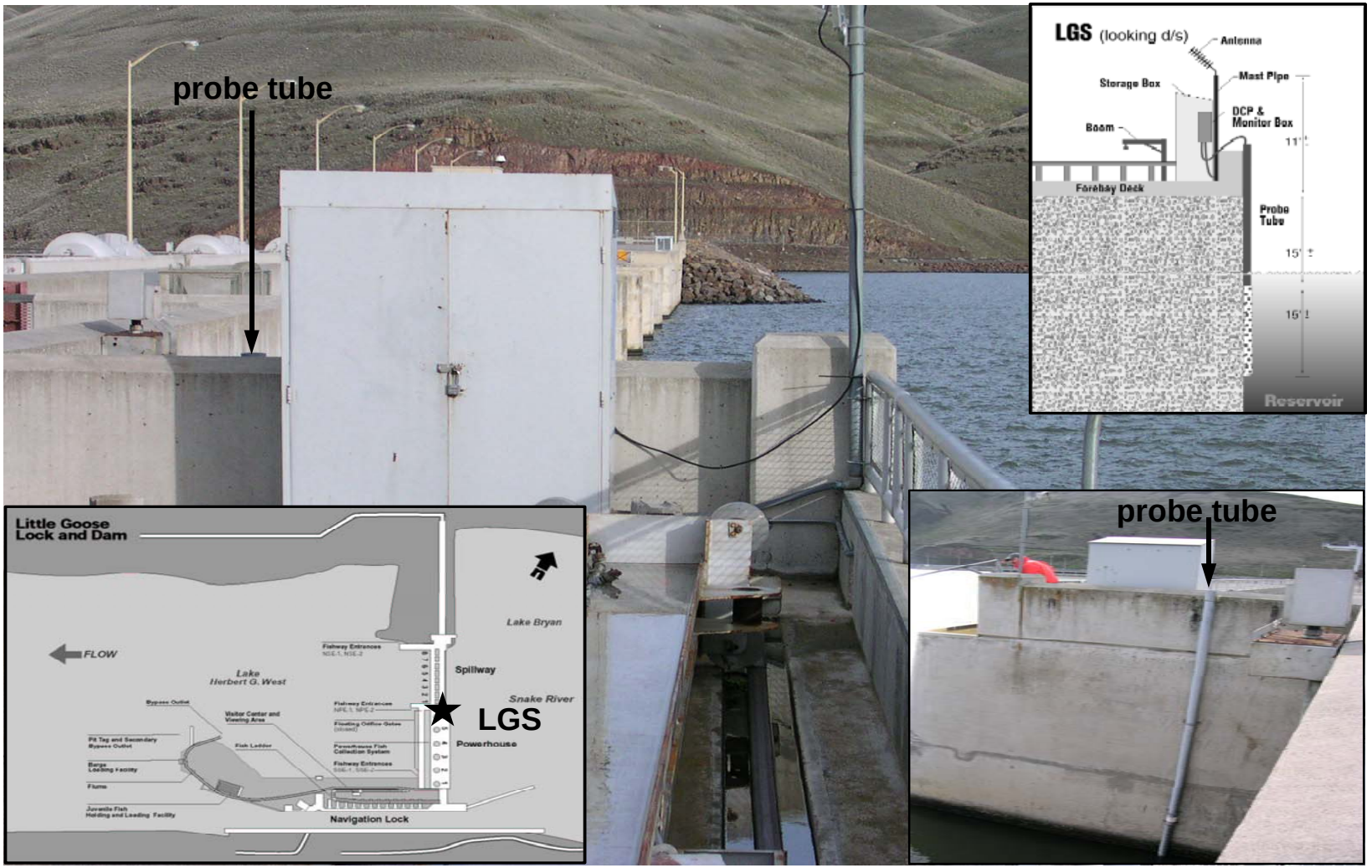
TDG Fix Monitor Station at Lower Granite Lock and Dam Forebay

FIGURE A-3



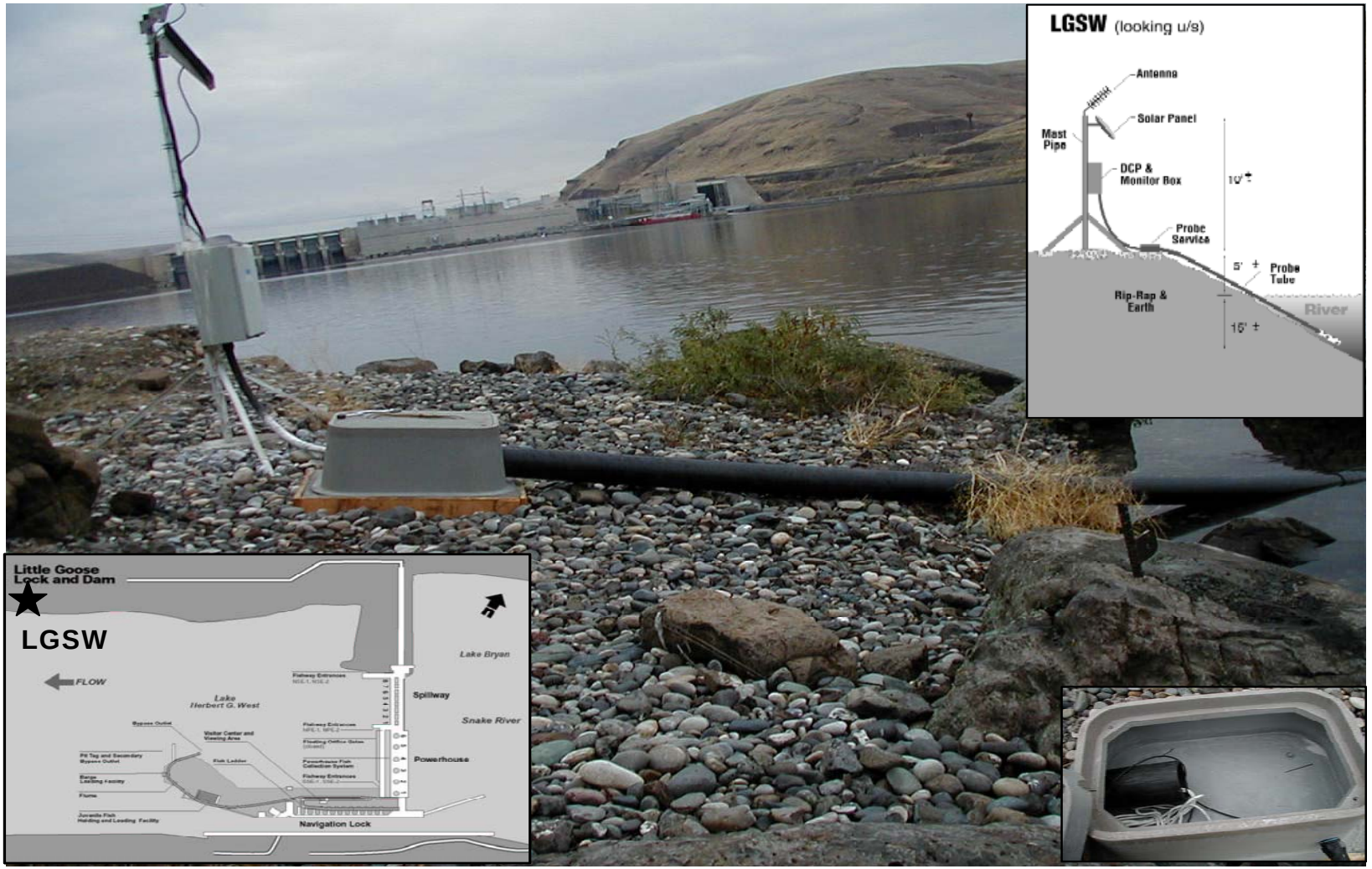
TDG Fix Monitor Station at Lower Granite Lock and Dam Tailwater

FIGURE A-4



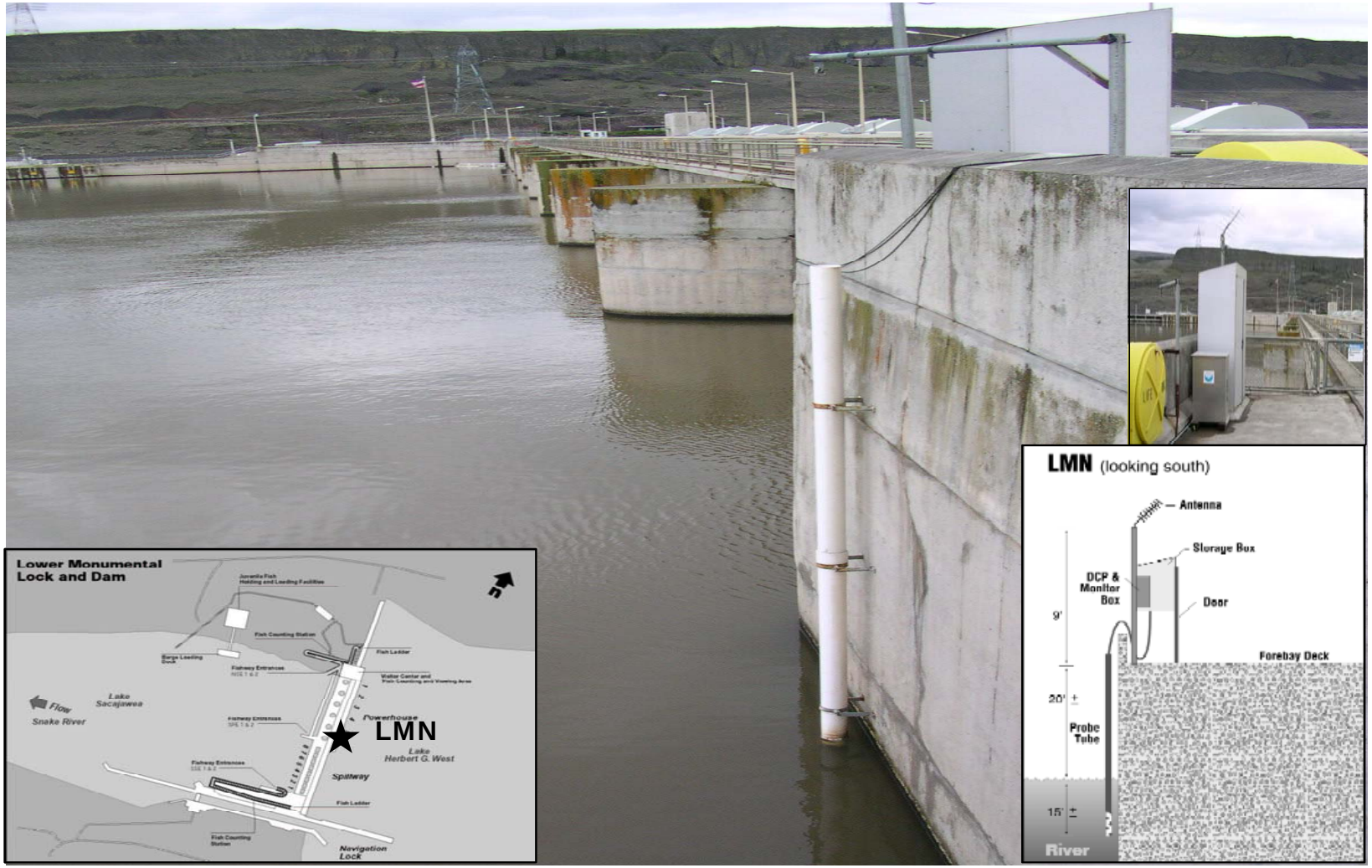
TDG Fix Monitor Station at Little Goose Lock and Dam Forebay

FIGURE A-5



TDG Fix Monitor Station at Little Goose Lock and Dam Tailwater

FIGURE A-6

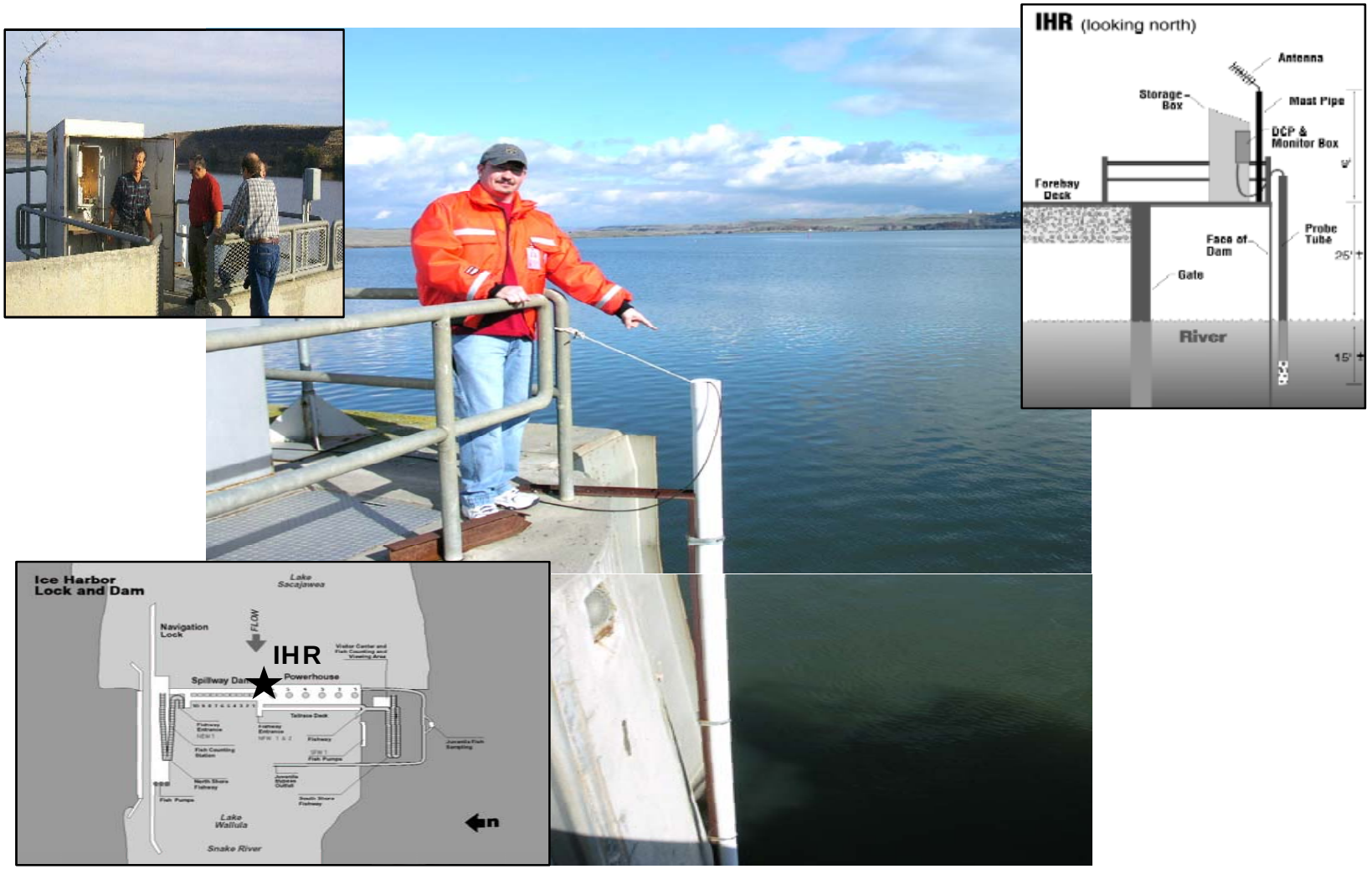


TDG Fix Monitor Station at Lower Monumental Lock and Dam Forebay

FIGURE A-7

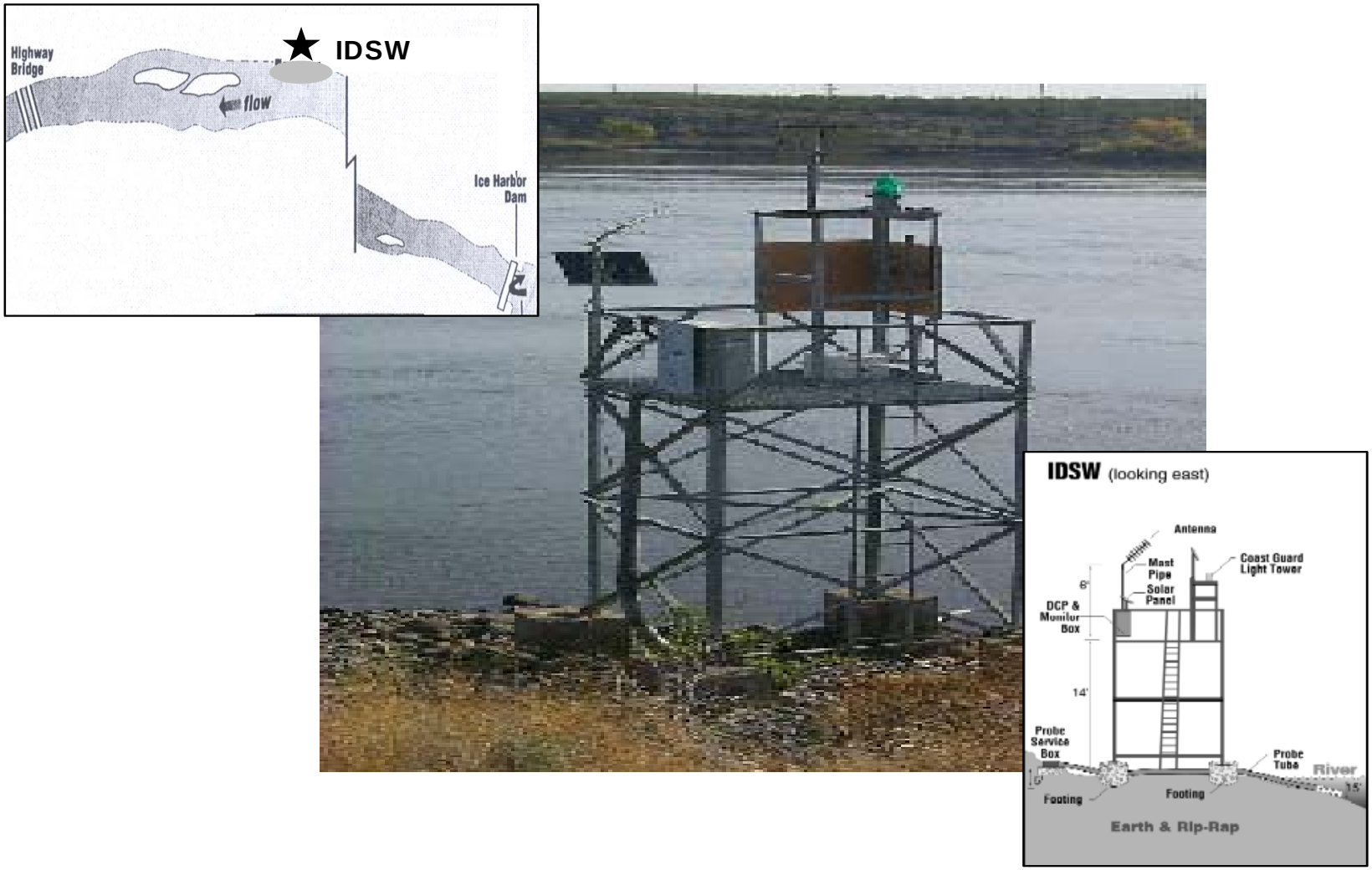
TDG Fix Monitor Station at Lower Monumental Lock and Dam Tailwater

FIGURE A-8



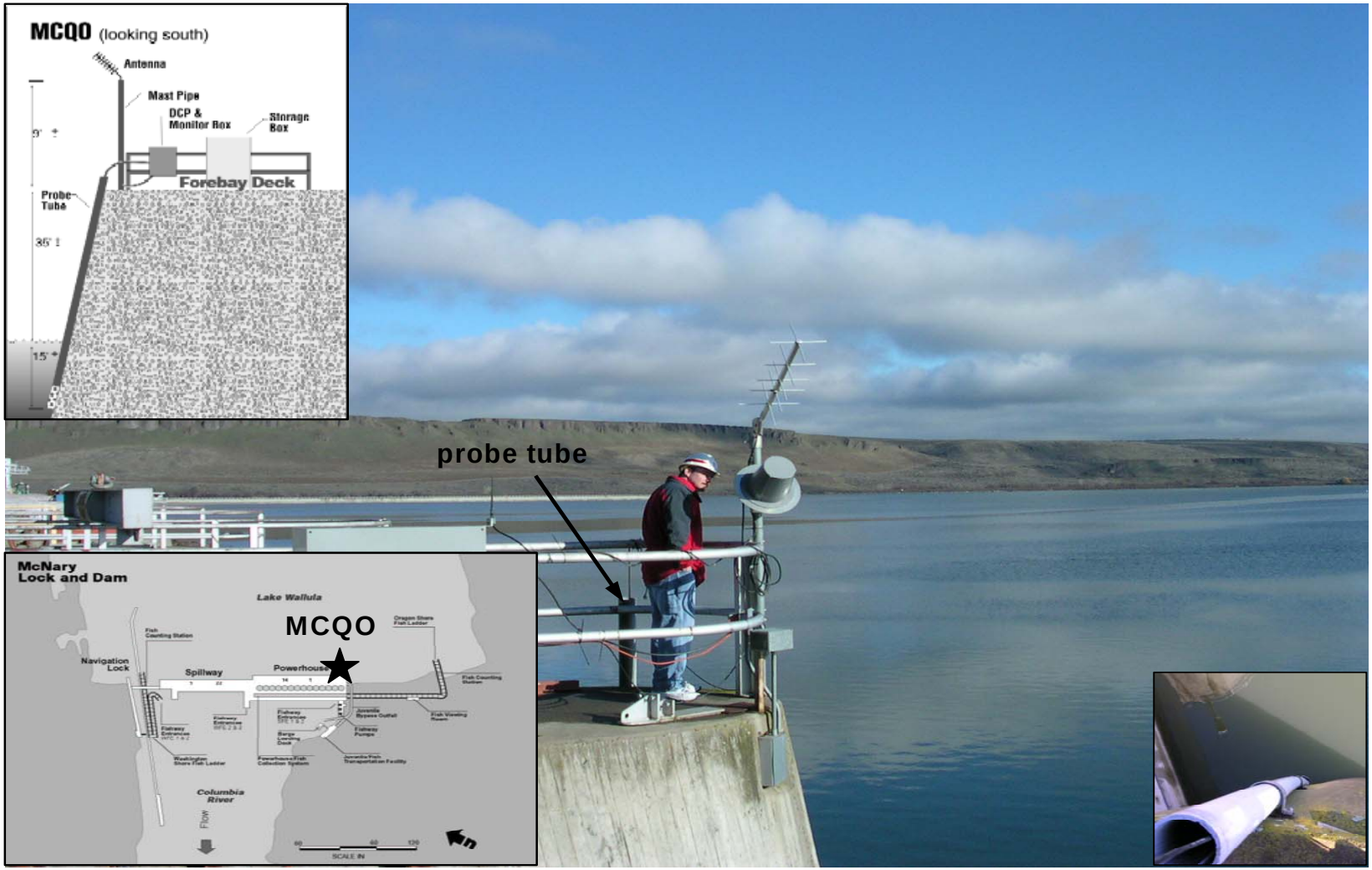
TDG Fix Monitor Station at Ice Harbor Lock and Dam Forebay

FIGURE A-9



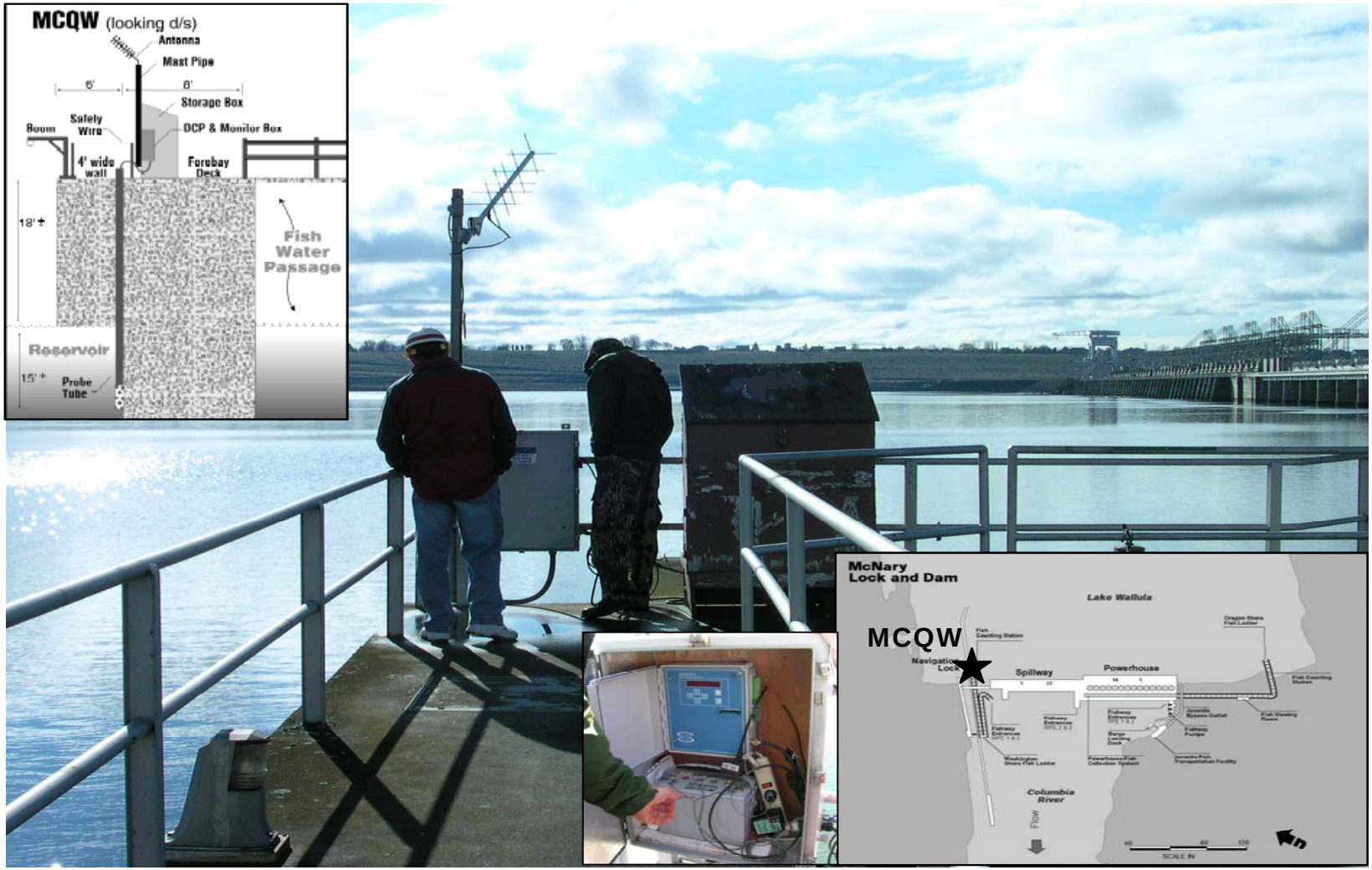
TDG Fix Monitor Station at Ice Harbor Lock and Dam Tailwater

FIGURE A-10



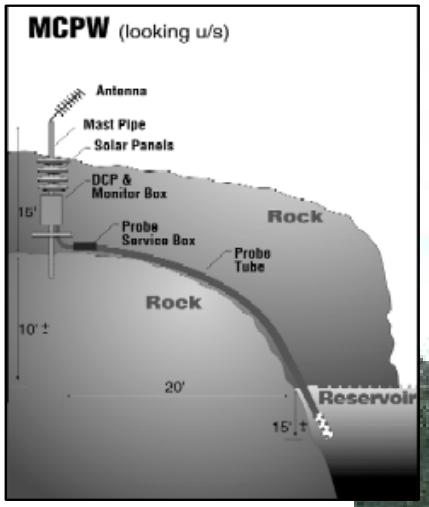
TDG Fix Monitor Station at McNary Lock and Dam Forebay in Oregon

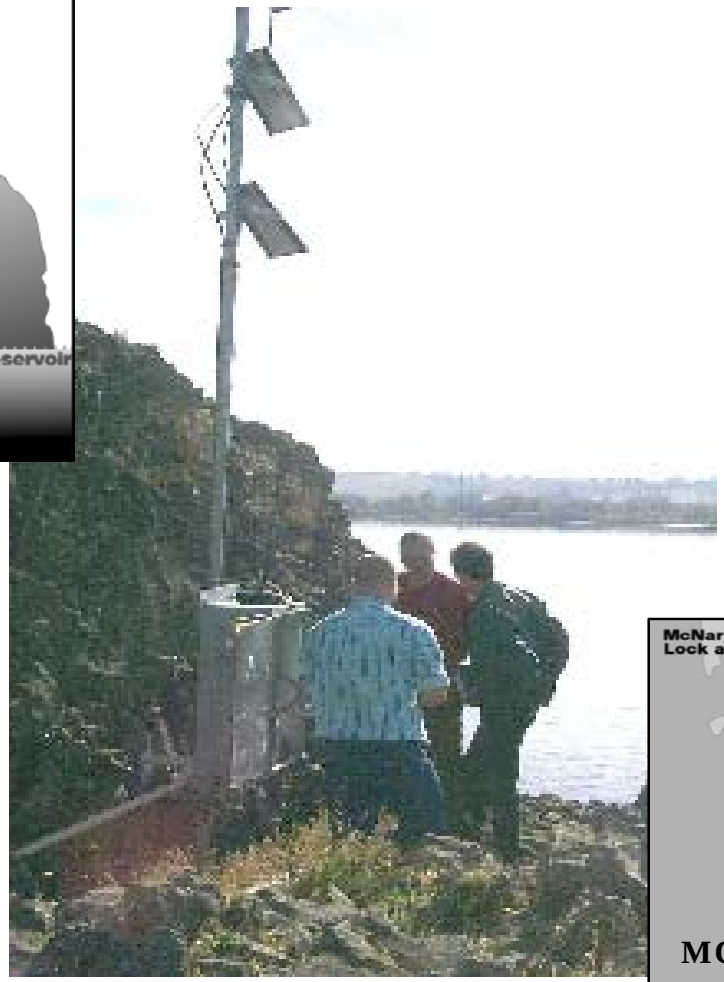
FIGURE A-11

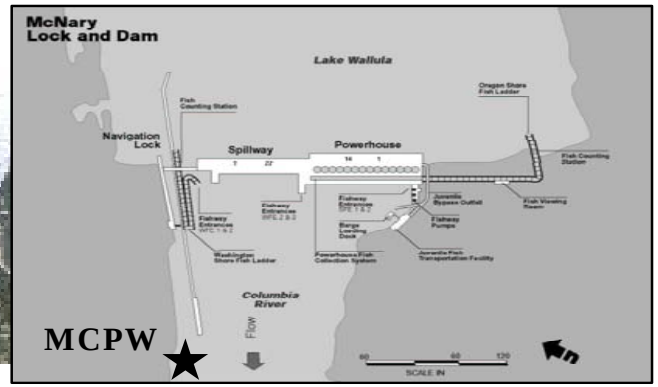


TDG Fix Monitor Station at McNary Lock and Dam Forebay in Washington

FIGURE A-12

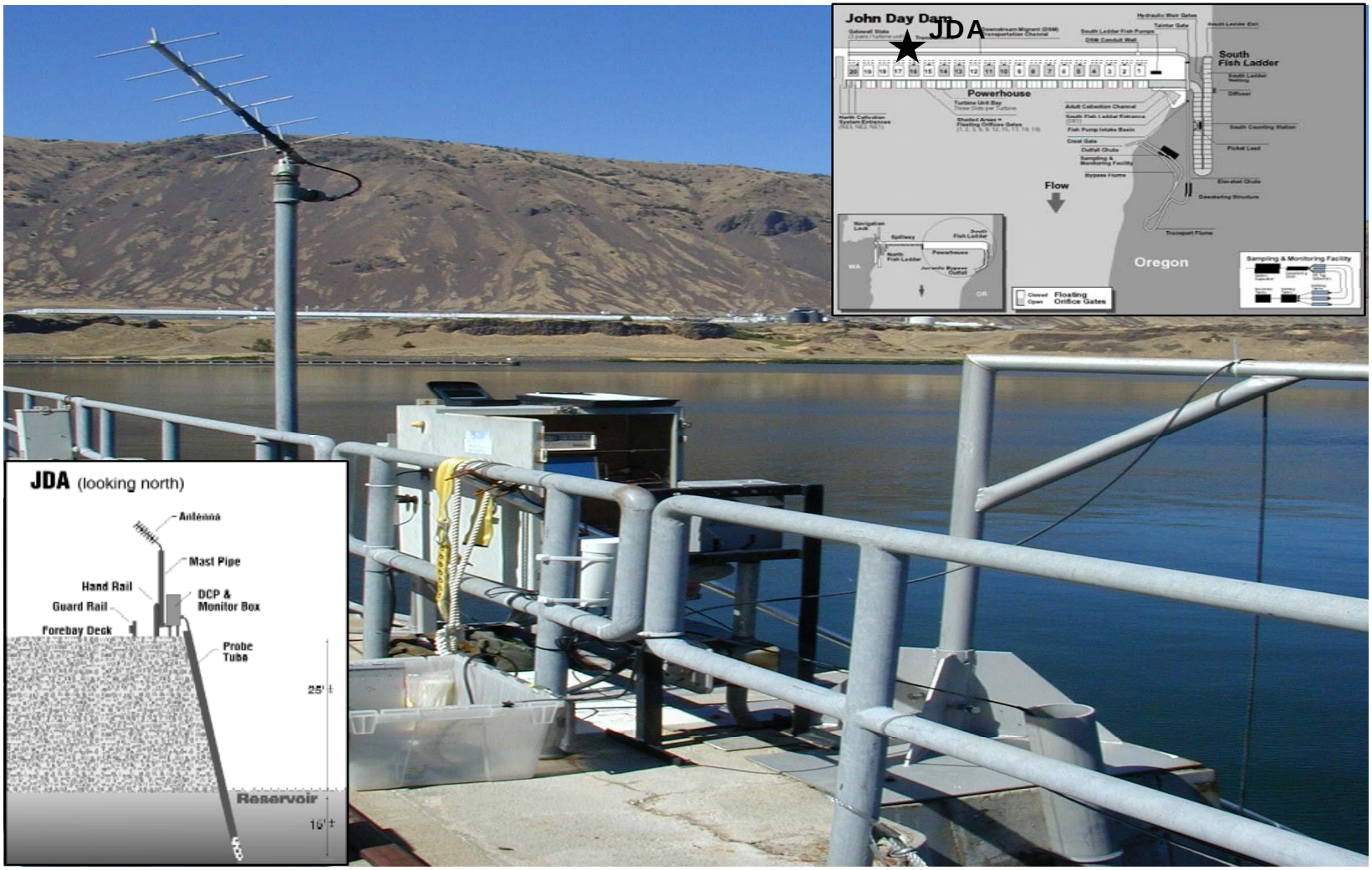






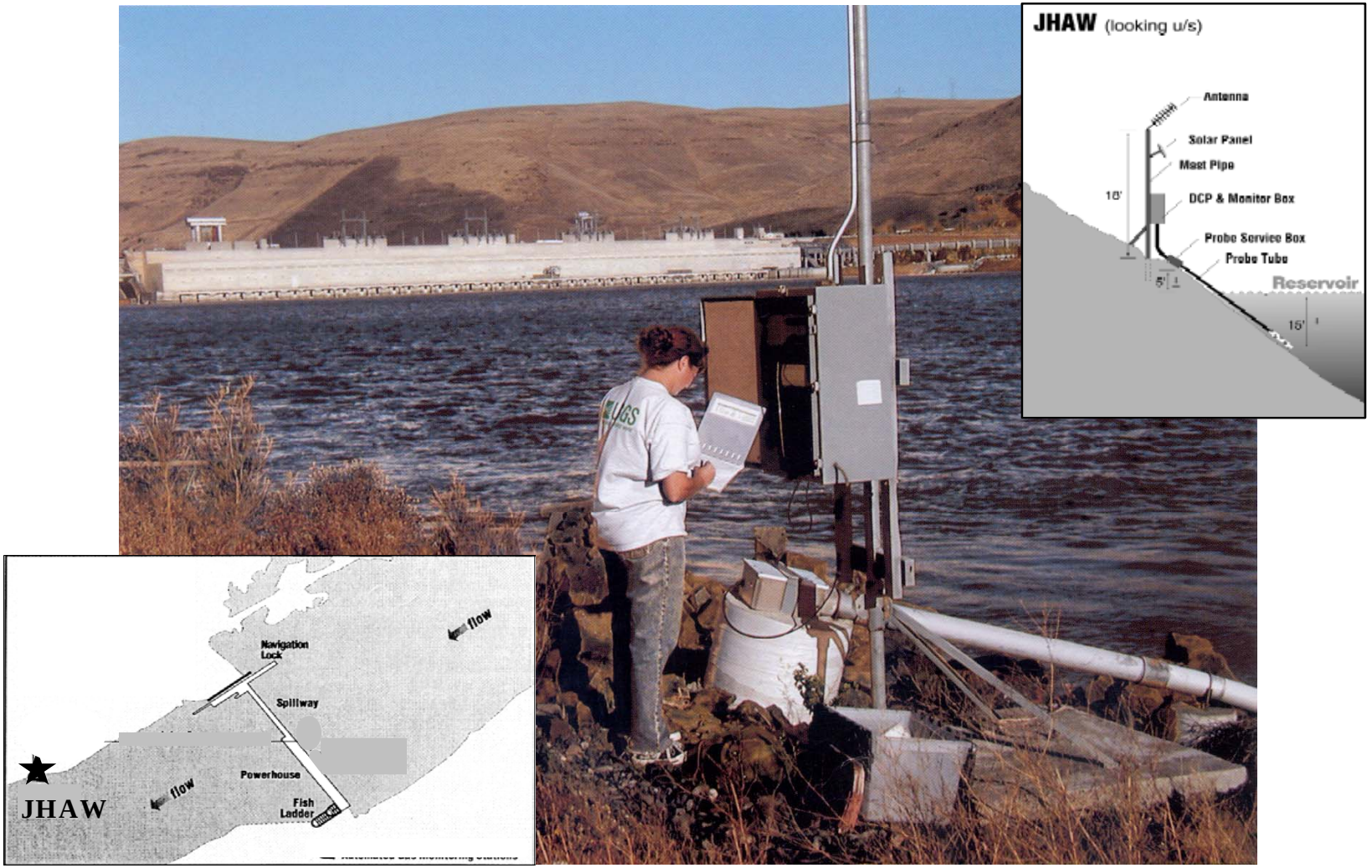
TDG Fix Monitor Station at McNary Lock and Dam Tailwater in Washington

FIGURE A-13



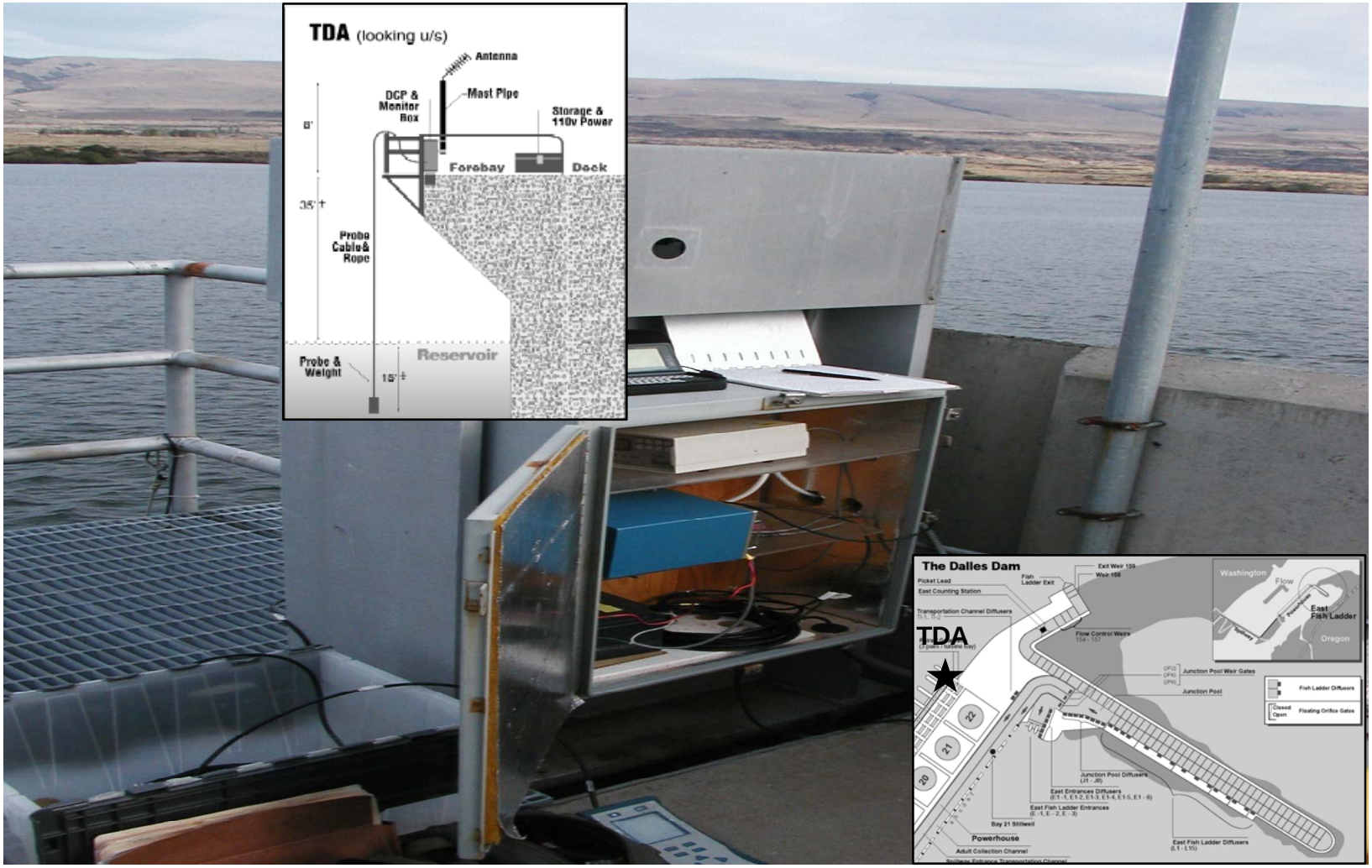
TDG Fix Monitor Station at John Day Dam Forebay

FIGURE A-14



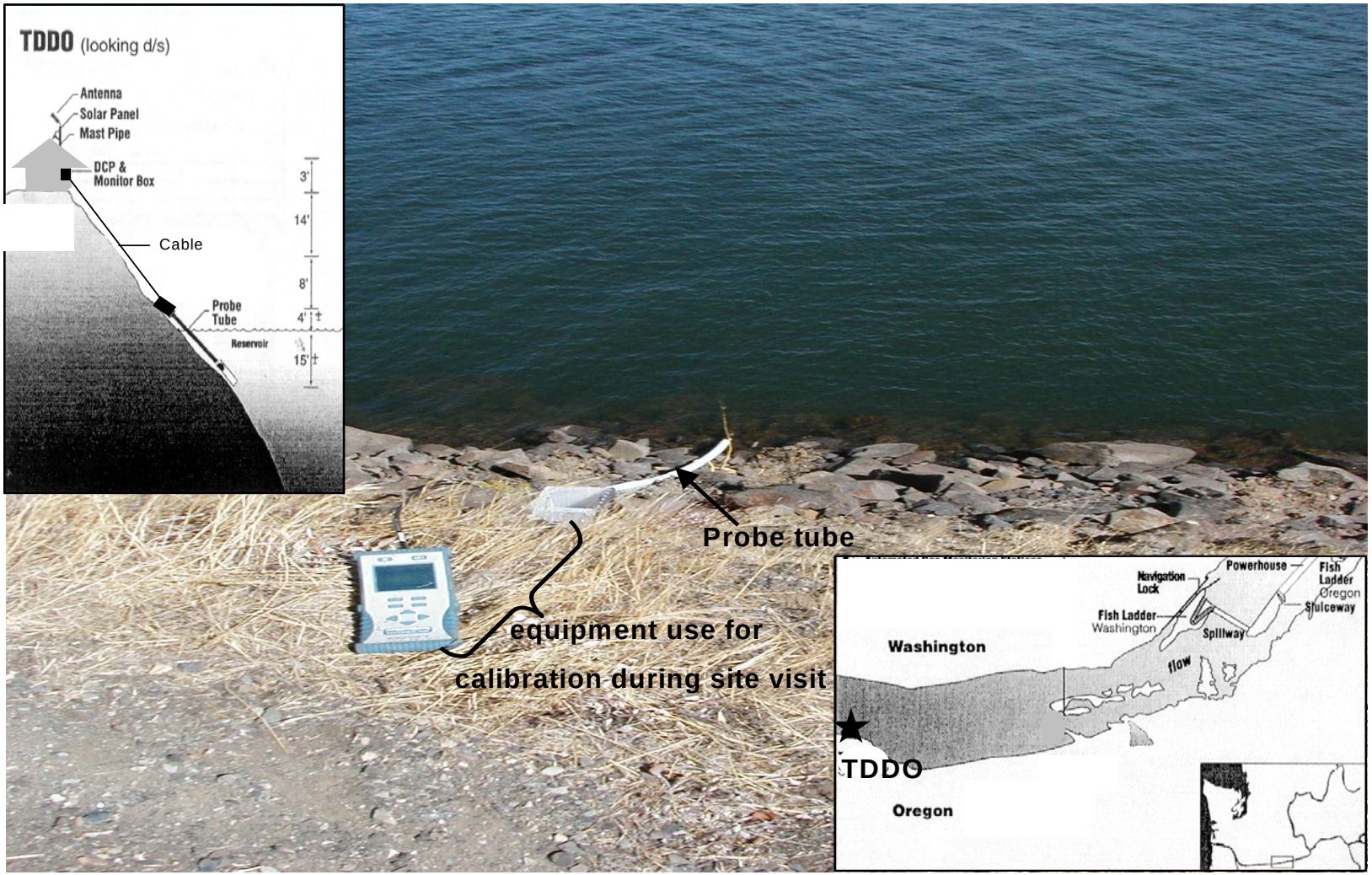
TDG Fix Monitor Station at John Day Dam Tailwater

FIGURE A-15



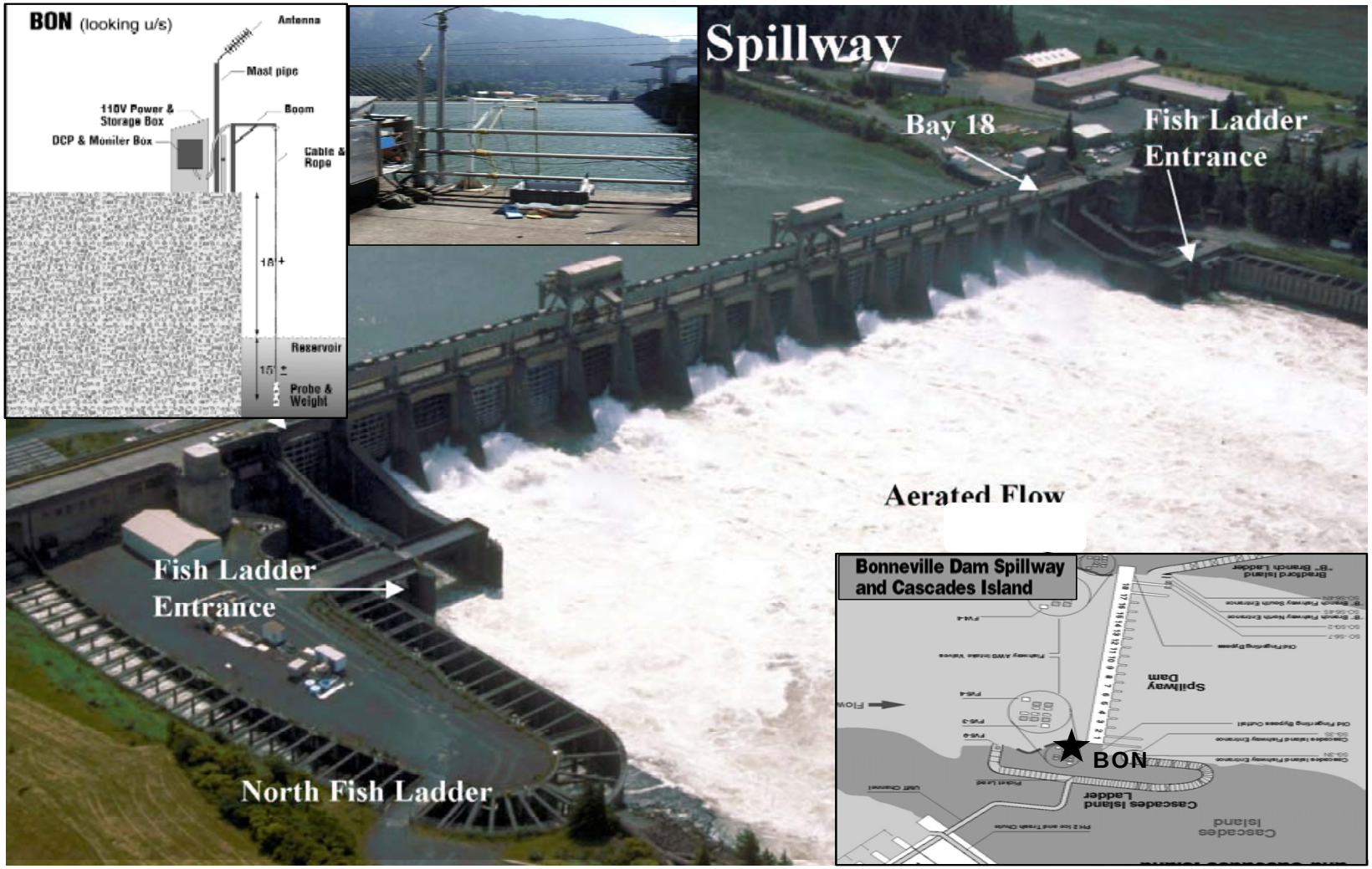
TDG Fix Monitor Station at The Dalles Dam Forebay

FIGURE A-16



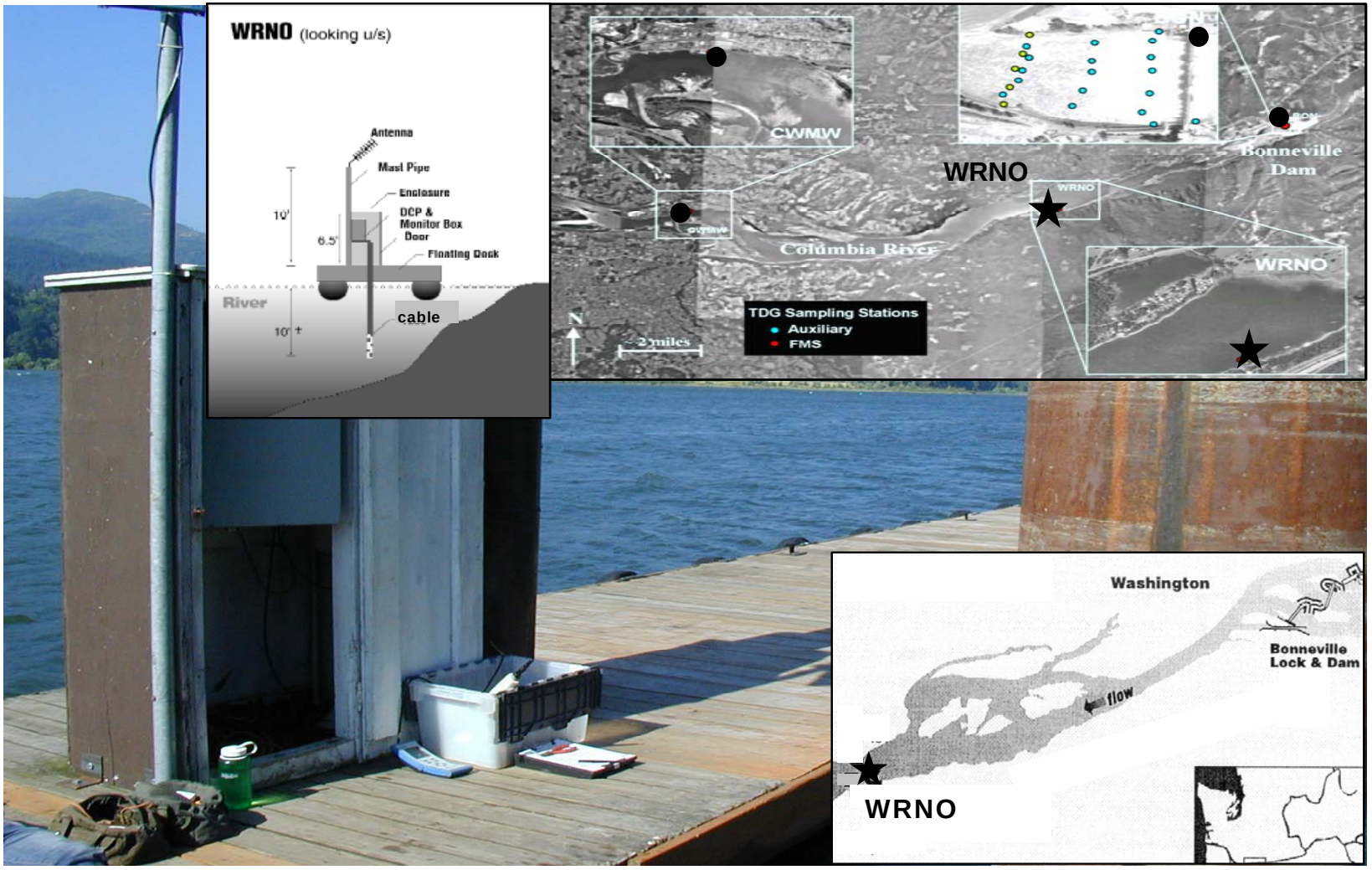
TDG Fix Monitor Station at The Dalles Dam Tailwater

FIGURE A-17



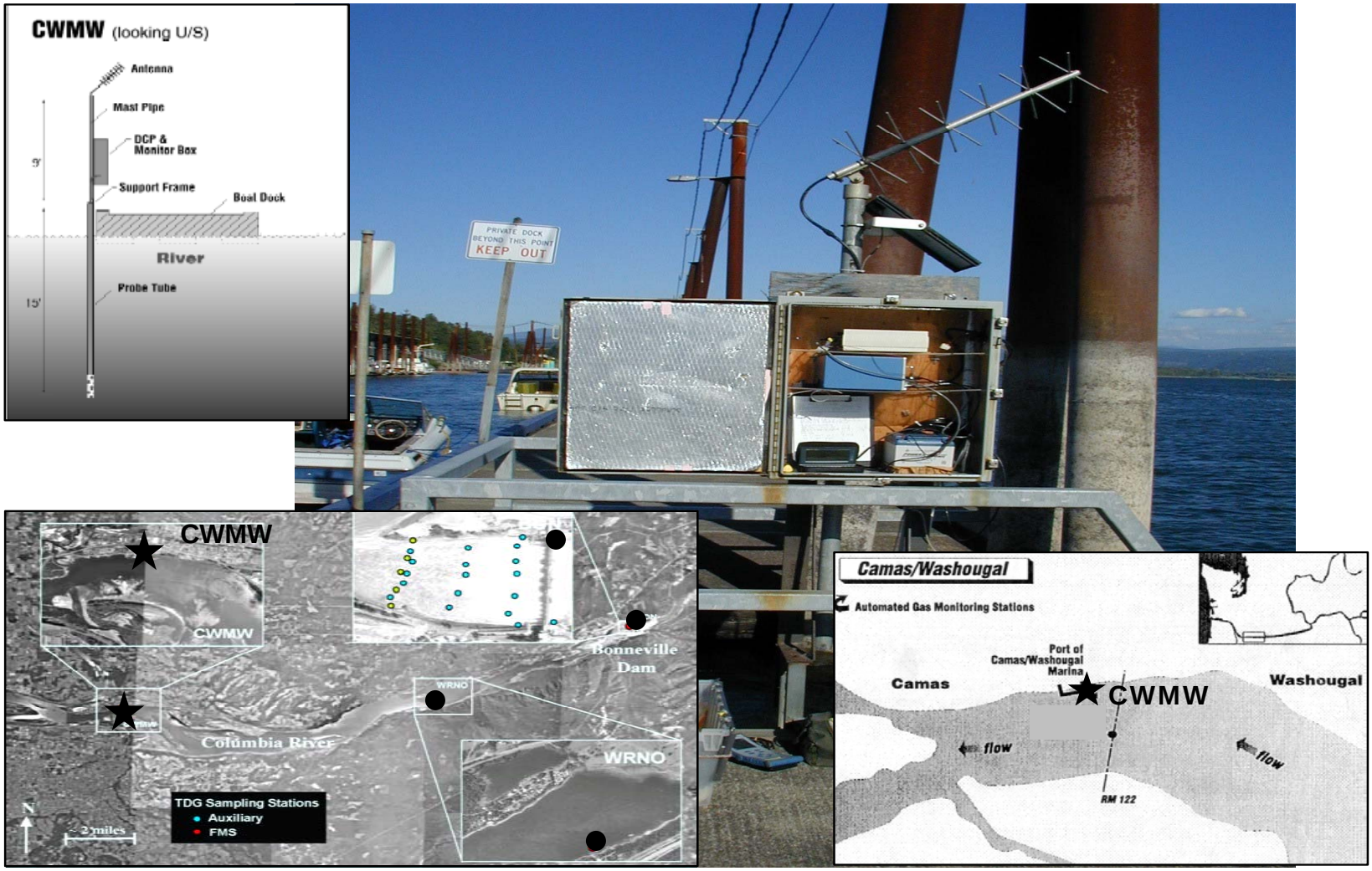
TDDG Fix Monitor Station at Bonneville Dam Forebay

FIGURE A-18



TDG Fix Monitor Station at Warrendale (Bonneville Dam Tailwater)

FIGURE A-19



TDG Fix Monitor Station at Camas/Washougal (Forebay)