

South River Science Team Human Exposure Pathways Evaluation

Activities Update
October 09, 2013



Human Exposure Evaluation

The key objectives:

- **better identify potential exposure,**
- **define potential risks and uncertainties,**
- **communicate information to the public.**

Human Exposure Evaluation

Exposure Team Members

DEQ: Don Kain, Calvin Jordan, Bill Hayden

DEQ: Jutta Schneider, Vince Maiden, Pat McMurray, Sonal Iyer

EPA: Betty Ann Quinn (no longer on Team - change Oct 1)

VDH: Doug Larsen, Jonathan Falk, Dwight Flammia, Karen Gruszynski

DGIF: Paul Bugas

DACS: David Brown

FWS: Anne Condon

DuPont: Mike Liberati, Ralph Stahl, Annette Guiseppi-Elie, Terry Gooding

Human Exposure Evaluation

Exposure scenarios evaluated

- ✓ Fish Consumption
- ✓ Recreational Use of River
- ✓ Potential Drinking Water exposures
- ✓ Contact with soils on the floodplain
- Potential dietary exposures
 - Domestic consumption, e.g., Garden crops, Beef, Poultry
 - Hunting consumption, e.g., waterfowl, small game

Communicating to public on these issues

Human Exposure Evaluation

Floodplain soils

- Potential exposure evaluated:
 - ✓ direct contact (soil sampling);
 - ✓ ingestion of garden crops (2-year garden study);
 - ✓ ambient air (2 rounds of ambient air sampling)
 - Communicating results
 - ✓ General conclusions included in fact sheet,
 - ✓ Letters to landowners sent, follow up phone calls
 - ✓ Some additional soil sampling at specific locations, including ponds
 - Additional letters provided to landowners
 - ✓ Peer Review publication of garden crop study (HERA)

Human Exposure Evaluation

Potential dietary exposures

- Hunting consumption, e.g., waterfowl, small game
 - √ Literature review of tissue levels completed
 - Includes domestic & game animals, total and methyl mercury
 - In general, results consistent with expectations
 - √ Results for waterfowl, deer, turtles, muskrats, squirrels samples available
 - √ Calculated consumption levels based on a number of scenarios
 - Meal size – 4, 6, 8 ounces
 - Exposure concentration estimates - 95 % UCL on mean or maximum
 - Preparation losses: No prep losses, pre-cooking losses, pre- & post-cooking losses

Human Exposure Evaluation

Potential dietary exposures

- Hunting consumption, e.g., waterfowl, small game
 - ✓ Platform presentation at SETAC 2012
 - ✓ Briefing Paper gives process and results for a conservative case (8-oz meal, “high-end” estimate of Hg, no prep losses)
 - Annual consumption levels ranges from 4 snapping turtles meals to unrestricted number (>1000) for deer
 - Fact sheet on wildlife consumption in progress
 - Peer review publication

Human Exposure Evaluation

Potential dietary exposures

✓ For livestock evaluation, sampling plan for cattle that graze on the floodplain based on likely exposure scenarios was developed.

Considerations for developing the plan include:

- How cattle are used and consumed
- How milk from cattle is used/consumed
- Defining which cattle actually graze on the floodplain
- Use of the VDACS post-mortem facilities for determining general background levels as well as potential floodplain animals
- Incorporating background levels in supermarket beef products
- Rationale for choosing cattle (versus goats, sheep, pigs, poultry)

✓ Sampling completed for beef (muscle, liver, kidney, heart) and milk

✓ Calculated consumption levels based on a number of scenarios (meal size primarily) for beef

– Waiting on milk results

– Briefing Paper, Fact Sheet, Peer Review Publication

Human Exposure Evaluation

Fact Sheets

- √ Fact sheets completed
 - √ Fact Sheet 1: General Introduction
 - *About the South River Science Team*
 - √ Fact Sheet 2: Exposure Summary
 - *People, Mercury, and the River*
 - √ Fact Sheet 3: Soil Sampling Results
 - ***Summary of South River Floodplain Soil Survey***
 - √ Fact Sheet 5: Garden Study
 - *Eating Vegetables Grown on the South River Floodplain*
- Other Fact Sheets, as warranted
 - Wildlife (in progress)
 - Livestock

Human Exposure Evaluation

Health survey at local clinics

- √ Local physicians (explicitly made aware of issue) have not reported any signs/symptoms
- √ Local health clinics have been provided literature (in both Spanish and English)
- Health survey to address effectiveness of consumption advisories

PIT Program

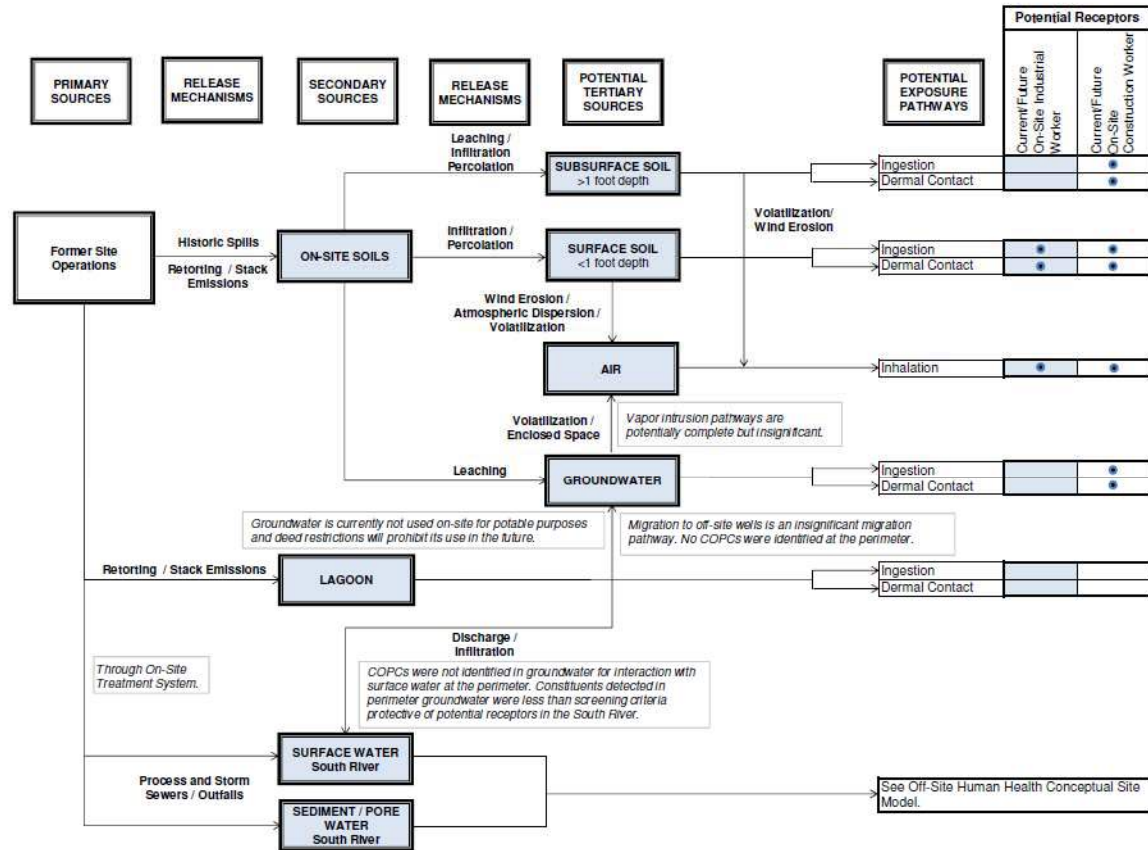
Other relevant activities

- Risk Report Former DuPont Waynesboro Facility (Oct 2012)
 - Evaluation of risk
 - On- and off-site for human and ecological receptors
- Team
 - EPA: Quinn, Montgomery and Suedel (USACE)
 - DuPont: Stahl and Guiseppi-Elie
 - URS: Mancini, Flanders, McCue, Badner
- Status: Preliminary Review Draft
 - Section 1, 2, 3 (partial), 4.1 in review

Other relevant activities

- Risk Report Former DuPont Waynesboro Facility
(Oct 2013)
 - On-site for human and ecological receptors
- Team
 - EPA: Quinn,
 - DuPont: Stahl and Guiseppi-Elie
 - URS: Mancini, Flanders, McCue, Badner
- Status
 - Report submitted and comments received from EPA
 - Working on revisions

DRAFT HUMAN HEALTH CONCEPTUAL SITE MODEL
DuPont South River Project, Virginia
On-Site Human Health

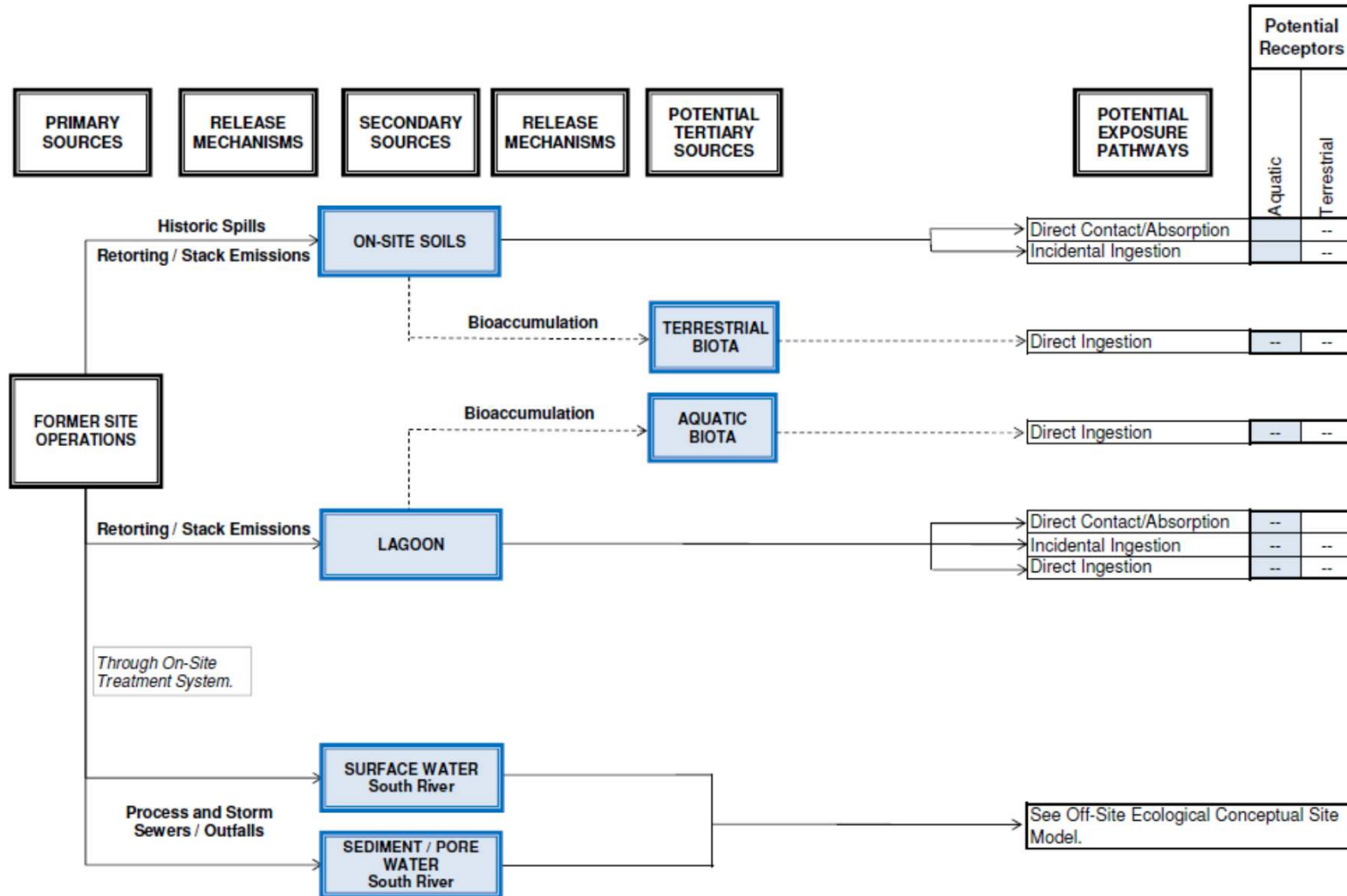


- Notes:
- CONTAMINANT MIGRATION PATHWAY
 - - - LIMITED OR INSIGNIFICANT CONTAMINANT MIGRATION PATHWAY
 - POTENTIALLY COMPLETE EXPOSURE PATHWAY
 - SECONDARY EXPOSURE PATHWAY
 - - - EXPOSURE PATHWAY IS POTENTIALLY COMPLETE BUT INSIGNIFICANT
 - BLANK = INCOMPLETE EXPOSURE PATHWAY

ITEMS WITH BLUE OUTLINES ARE LINKS TO ACCESS THE CONCEPTUAL SITE MODEL REFERENCE LIBRARY

DRAFT

DRAFT ECOLOGICAL CONCEPTUAL SITE MODEL
DuPont South River Project, Virginia
On-Site Ecological



Notes:

- CONTAMINANT MIGRATION PATHWAY
- LIMITED OR INSIGNIFICANT CONTAMINANT MIGRATION PATHWAY
- POTENTIALLY COMPLETE EXPOSURE PATHWAY
- SECONDARY EXPOSURE PATHWAY
- EXPOSURE PATHWAY IS POTENTIALLY COMPLETE BUT INSIGNIFICANT
- BLANK = INCOMPLETE EXPOSURE PATHWAY

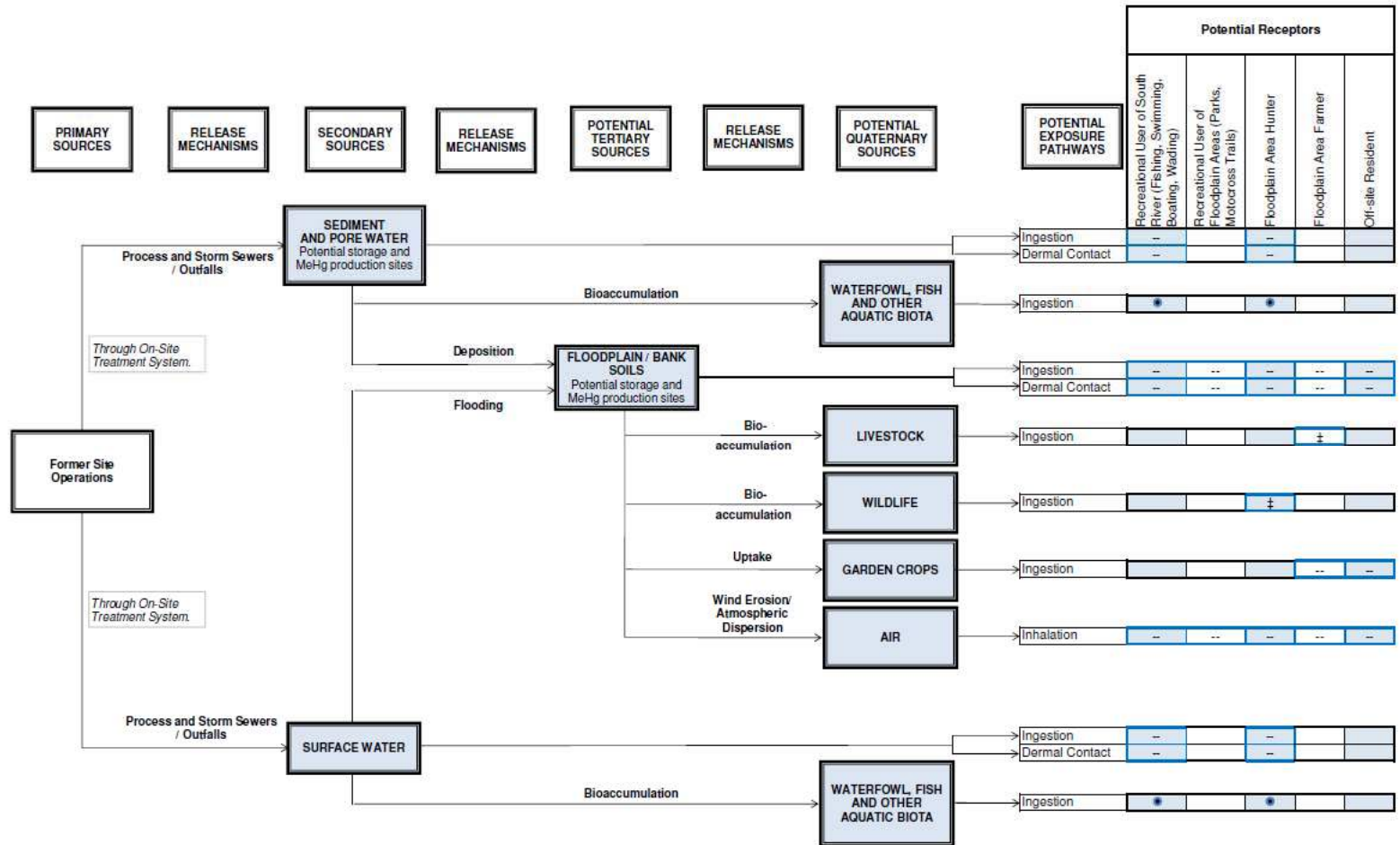
ITEMS WITH BLUE OUTLINES ARE LINKS TO ACCESS THE CONCEPTUAL SITE MODEL REFERENCE LIBRARY

DRAFT

Other relevant activities

- Risk Report Former DuPont Waynesboro Facility (Oct 2013)
 - Off-site for human and ecological receptors
- Team
 - VA DEQ: Schneider, Maiden, McMurray, Iyer
 - DuPont: Stahl and Guiseppi-Elie
 - URS: Mancini, Flanders, McCue, Badner
- Status
 - Transition meetings – July and August
 - Timeline – Site visit in Oct; Completion Goal 01/2015

DRAFT HUMAN HEALTH CONCEPTUAL SITE MODEL
DuPont South River Project, Virginia
Off-Site Human Health

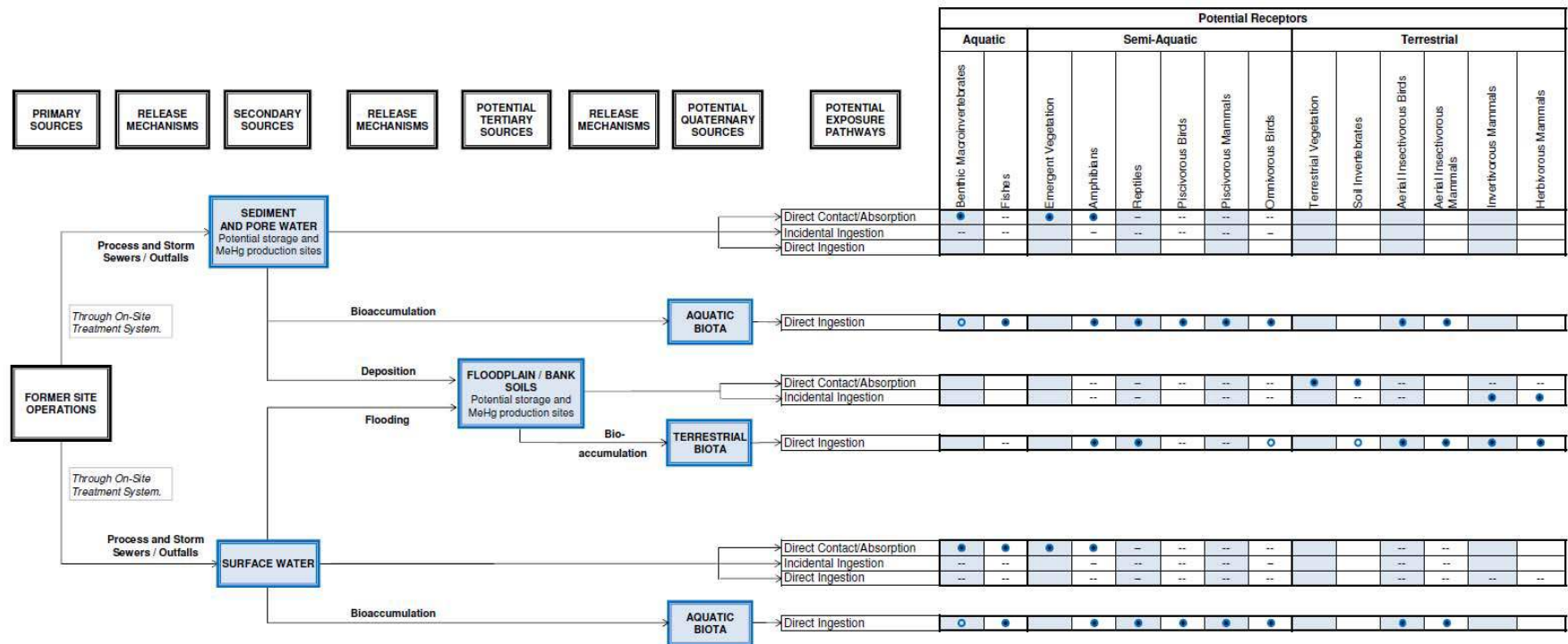


Notes:

- CONTAMINANT MIGRATION PATHWAY
- - - LIMITED OR INSIGNIFICANT CONTAMINANT MIGRATION PATHWAY
- POTENTIALLY COMPLETE EXPOSURE PATHWAY
- SECONDARY EXPOSURE PATHWAY
- EXPOSURE PATHWAY IS POTENTIALLY COMPLETE BUT INSIGNIFICANT
- ± EXPOSURE PATHWAY EVALUATION IS IN PROGRESS
- BLANK = INCOMPLETE EXPOSURE PATHWAY

DRAFT

DRAFT ECOLOGICAL CONCEPTUAL SITE MODEL
DuPont South River Project, Virginia
Off-Site Ecological



DRAFT