White Swan Laundry and Cleaner Inc.

Wall Township, New Jersey
EPA Facility ID: NJSFN0204241
Basin: Mullica-Toms Watershed
HUC: 02040301

Executive Summary

The White Swan Laundry and Cleaner Inc. site (White Swan) consists of two overlapping, contaminated groundwater plumes in Wall Township, Monmouth County, New Jersey. The sources of the plumes are two former dry-cleaning facilities: White Swan and Sun Cleaners. Contaminants associated with dry-cleaning operations, including the volatile organic compounds PCE and TCE, have been detected in soil and groundwater at the White Swan Laundry and Cleaners property and the Sun Cleaners property, and in surface water down-gradient of these properties. VOCs are the primary contaminants of concern to NOAA. The habitat of primary concern to NOAA is Wreck Pond, where PCE has been detected. Wreck Pond, which is connected to the Atlantic Ocean, is located northeast of the two dry-cleaning facilities. Nearby Wreck Pond Brook, Watson Creek, Glimmer Glass Lake, Stockton Lake, the Manasquan River estuary, and Judas Creek, an intermittent stream adjacent to the Sun Cleaners property where PCE was detected, are secondary habitats of concern. The surface waters near the site are used by many NOAA trust resources as a nursery and spawning area and as adult habitat. Groundwater transport is the primary pathway for the migration of contaminants to NOAA trust resources

Site Background

The White Swan Laundry and Cleaner Inc. site (White Swan) is in a commercial/residential area of Wall Township, Monmouth County, New Jersey (Figure 1). The site consists of two overlapping, contaminated groundwater plumes, one emanating from the former White Swan Laundry and Cleaner property (White Swan property), and the other emanating from the former Sun Cleaners property (USEPA 2004). Volatile organic compounds (VOCs) associated with dry-cleaning operations, including tetrachloroethylene (PCE) and trichloroethylene (TCE), have been detected in soil, surface water, and groundwater samples collected from the White Swan site. The two former dry-cleaning facilities are located southwest of Wreck Pond, a 19-ha (48-acre) pond that connects to the Atlantic Ocean via a large pipe (NJDEP 2004); PCE has been detected in surface water samples from Wreck Pond and Judas Creek. The White Swan property is approximately 270 m (900 ft) from Watson Creek and the Sun Cleaners property is just south of Watson Creek. Watson Creek, Stockton Lake, Glimmer Glass Lake, and the Manasquan River estuary all ultimately discharge to the Atlantic Ocean (Figure 1).

White Swan Property

A dry-cleaning facility was operated on the White Swan property from approximately 1964 through 1986. Waste from the dry cleaning was discharged into a septic tank connected to a seepage pit until the early 1980s, when the property was connected to the public sewer system (Weston 2003). The seepage pit is a covered pit with a perforated lining through which discharge from the septic tank can infiltrate into the surrounding soil. Both the septic

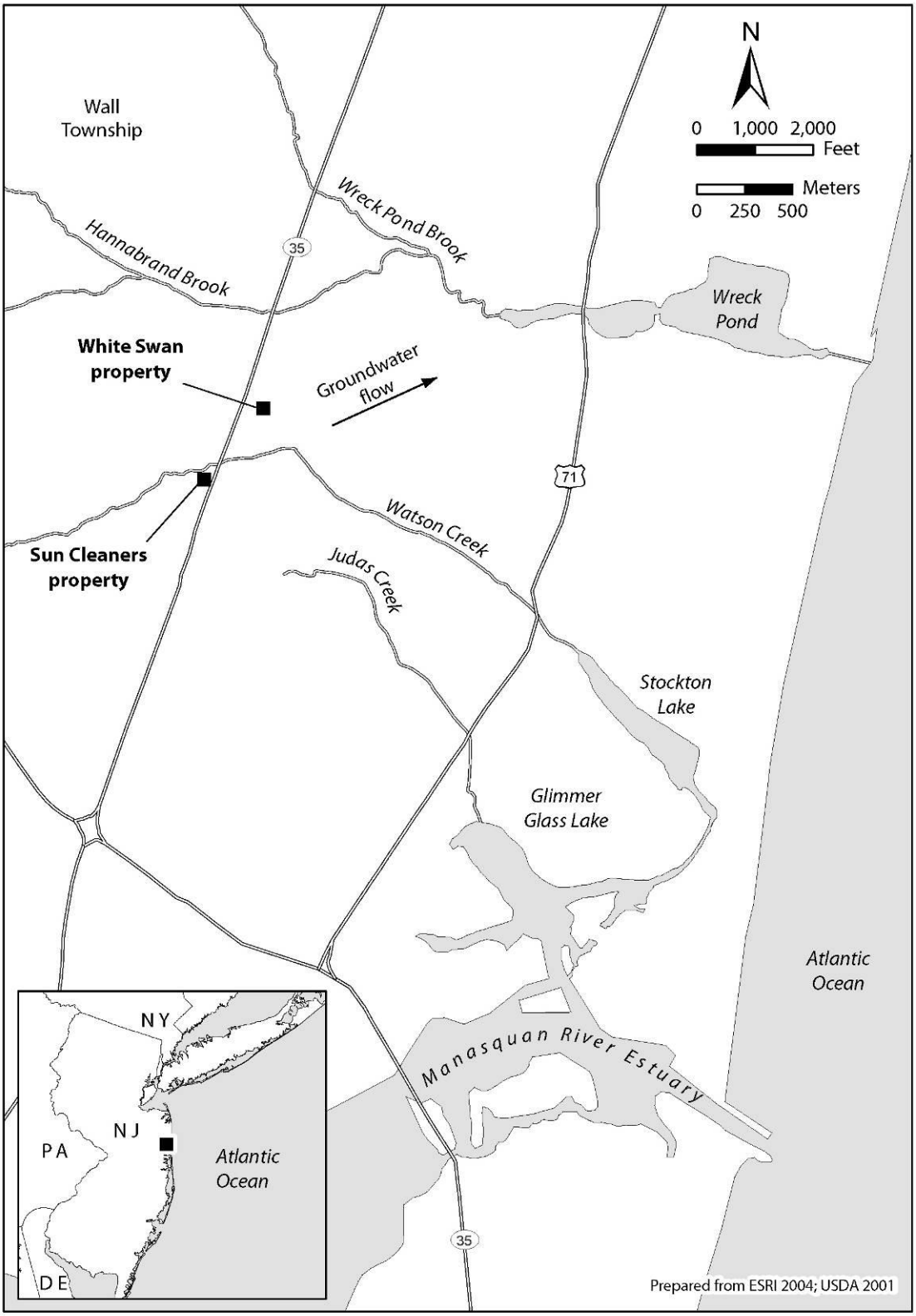

Figure 1. Location of the White Swan Laundry and Cleaner Inc. site , Wall Township, New Jersey.

tank and the seepage pit were located on the White Swan property. Contaminants associated with dry-cleaning chemicals, including the VOCs PCE and TCE, were detected at the White Swan property during investigations conducted from 2000 to 2003 (Weston 2003).

Sun Cleaners Property

Dry cleaning operations were conducted at the Sun Cleaners property from about 1960 until 1991. During investigations conducted at the Sun Cleaners property from 1995 to 1996, a discharge pipe from the dry-cleaning building was observed; the discharge pipe connected to equipment that had been used to separate dry-cleaning solvent from water used in the dry-cleaning process. No containment structure was documented below the discharge pipe (Weston 2003). Contaminants associated with dry-cleaning chemicals: VOCs, including TCE and PCE, have been detected at the Sun Cleaners property (Weston 2003).

The White Swan site was placed on the National Priorities List on September 23, 2004. A remedial investigation/feasibility study of the site began on September 2, 2006 and activities are still underway; no results from that investigation were available at the time of this report (USEPA 2004, 2008).

Groundwater transport is the primary pathway for the migration of contaminants from the site to NOAA trust resources. Groundwater flow in the vicinity of the site is generally to the east-northeast. Groundwater is encountered beneath the site at 0.9 to 6.7 m (3 to 22 ft) below the ground surface (Weston 2003).

NOAA Trust Resources

The habitat of primary concern to NOAA is Wreck Pond (Figure 1), where PCE has been detected. Wreck Pond is connected to the Atlantic Ocean via a large pipe (NJDEP 2004). Other habitats that are potentially impacted by the site are Wreck Pond Brook, Judas Creek, Watson Creek, Stockton Lake, Glimmer Glass Lake, and the Manasquan River estuary (Figure 1). Watson Creek empties into Stockton Lake, which connects to Glimmer Glass Lake. Judas Creek, an intermittent stream adjacent to the Sun Cleaners property, also empties into Glimmer Glass Lake. Glimmer Glass Lake is connected to the Manasquan River estuary, which is in turn connected to the Atlantic Ocean. The White Swan and Sun Cleaners properties are approximately 4 km (2.5 mi) from the estuary.

Table 1 summarizes the NOAA trust resources present in the Manasquan River estuary, Wreck Pond, and the nearshore Atlantic Ocean in the vicinity of the site. Anadromous alewife and blueback herring migrate through Wreck Pond to spawn in its tributaries, including Wreck Pond Brook and Hannabrand Brook (Figure 1) (Smith 2006; NJDEP 2005a). Anadromous striped bass are present in the neashore marine waters adjacent to Wreck Pond but are not likely to migrate into its tributaries to spawn because of the water's shallowness and rate of slow flow. The nearshore Atlantic Ocean adjacent to Wreck Pond provides habitat to many marine species, including bluefish, northern searobin, striped mullet, summer flounder, tautog, and weakfish (Burlas et al. 2001). In addition, blue crab, mummichog**,** river herring (blueback herring and alewife), silversides, summer flounder, and white perch may be present in the tidally influenced creek and streams adjacent to the site. Shellfish present in the nearshore areas of the Atlantic Ocean adjacent to Wreck Pond include Atlantic sand crab, Atlantic surf clam, blue mussel, and lady crab (NJDEP 1999).

Table 1. NOAA trust resources present in the Manasquan River estuary, Wreck Pond, and the nearshore Atlantic Ocean near the White Swan Laundry and Cleaners Inc. site (MWMG 1999; Burlas et al. 2001; NJDEP 2005a; Smith 2006; Rossman 2006).

Species		**Habitat Use**			**Fisheries**	
Common Name	Scientific Name	Spawning Area	Nursery Area	Adult Habitat	Comm.	Rec.
ANADROMOUS FISH						
Alewife	*Alosa pseudoharengus*		♦	♦		
Blueback herring	*Alosa aestivalis*		♦	♦		
Gizzard shad	*Dorosoma cepedianum*		♦	♦		
Striped bass	*Morone saxatilis*			♦		♦
White perch	*Morone americana*			♦		
CATADROMOUS FISH						
American eel	*Anguilla rostrata*			♦		
MARINE/ ESTUARINE FISH						
American sand lance	*Ammodytes americanus*	♦	♦	♦		
Atlantic croaker	*Micropogonias undulatus*	♦	♦	♦		
Atlantic herring	*Clupea harengus*	♦	♦	♦		
Atlantic mackerel	*Scomber scombrus*		♦	♦	♦	
Atlantic menhaden	*Brevoortia tyrannus*	♦	♦	♦		
Atlantic needlefish	*Strongylura marina*	♦	♦	♦		
Atlantic silverside	*Menidia menidia*	♦	♦	♦		
Bay anchovy	*Anchoa mitchilli*	♦	♦	♦		
Black drum	*Pogonias cromis*					
Black sea bass	*Centropristis striata*	♦	♦	♦	♦	♦
Bluefish	*Pomatomus saltatrix*		♦	♦	♦	♦
Butterfish	*Peprilus triacanthus*	♦	♦	♦	♦	
Crevalle jack	*Caranx hippos*	♦	♦	♦		
Cunner	*Tautogolabrus adspersus*	♦	♦	♦		♦
Florida pompano	*Trachinotus carolinus*		♦	♦		
Inland silverside	*Menidia beryllina*	♦	♦	♦		
Mummichog	*Fundulus heteroclitus*	♦	♦	♦		
Northern kingfish	*Menticirrhus saxatilis*	♦	♦	♦	♦	♦
Northern pipefish	*Syngnathus fuscus*	♦	♦	♦		
Northern puffer	*Sphoeroides maculatus*	♦	♦	♦		
Northern searobin	*Prionotus carolinus*	♦	♦	♦		♦
Permit	*Trachinotus falcatus*		♦	♦		
Red hake	*Urophycis chuss*	♦	♦	♦		
Sheepshead minnow	*Cyprinodon variegatus*	♦	♦	♦		
Silver perch	*Bairdiella chrysoura*	♦	♦	♦		
Silversides	*Menidia spp.*	♦	♦	♦		
Spot	*Leiostomus xanthurus*	♦	♦	♦		

Table 1 continued on next page

Table 1, *cont*.

Species		**Habitat Use**			**Fisheries**	
Common Name	Scientific Name	Spawning Area	Nursery Area	Adult Habitat	Comm.	Rec.
MARINE/ ESTUARINE FISH						
Spotted hake	*Urophycis regia*	♦	♦	♦		
Summer flounder	*Paralichthys dentatus*	♦	♦	♦	♦	♦
Tautog	*Tautoga onitis*	♦	♦	♦	♦	♦
Weakfish	*Cynoscion regalis*	♦	♦	♦	♦	♦
White mullet	*Mugil curema*	♦	♦	♦		
Windowpane	*Scophthalmus aquosus*	♦	♦	♦		
Winter flounder	*Pseudopleuronectes americanus*	♦	♦	♦	♦	♦
INVERTEBRATES						
Atlantic surfclam	*Spisula solidissima*	♦	♦	♦	♦	
Blue crab	*Callinectes sapidus*	♦	♦	♦	♦	♦
Blue mussel	*Mytilus edulis*	♦	♦	♦		
Eastern oyster	*Crassostrea virginica*	♦	♦	♦		
Lady crab	*Ovalipes ocellatus*	♦	♦	♦		
Northern quahog	*Mercenaria mercenaria*	♦	♦	♦	♦	♦

The Manasquan River estuary is used by many fish and shellfish species as a nursery and spawning area and as adult habitat. NOAA trust resources in the Manasquan River estuary in the vicinity of the site include alewife, American eel, Atlantic croaker, Atlantic herring, Atlantic menhaden, black drum, black sea bass, blueback herring, gizzard shad, red hake, northern pipefish, spotted seatrout, striped bass, summer and winter flounder (MWMG 1999). Shellfish, including blue crab, blue mussel, Eastern oyster, and northern quahog, are also found in the Manasquan River estuary (MWMG 2000).

Commercial fisheries in the Atlantic Ocean near the site include Atlantic mackerel, black sea bass, bluefish, butterfish, northern kingfish, summer flounder, tautog, weakfish, and winter flounder (NJDEP 2006a). Recreational fishers commonly target black sea bass, bluefish, winter cunner, northern kingfish, northern searobin, striped bass, summer flounder, tautog, weakfish, and winter flounder in the vicinity of the site (Burlas et al. 2001).

Shellfish species that are commercially harvested in the vicinity of the site are Atlantic surf clam, blue crab, and northern quahog (NJDEP 2006a). Blue crab and northern quahog are also harvested recreationally (NJDEP 2006b). The harvesting of shellfish is prohibited within approximately 0.8 km (0.5 mi) of land in the section of the Atlantic Ocean adjacent to Wreck Pond (NJDEP 2005b). Shellfish can be harvested in the Manasquan River estuary only by special permit; the shellfish must be processed in a depuration plant (where pollutants are purged from shellfish) or held in clean estuarine waters before they can be eaten (NJDEP 2005b).

No regional fish consumption advisories specific to the Manasquan River estuary or Wreck Pond and its tributaries are in effect. In 2006, the New Jersey Department of Environmental Protection (NJDEP) issued a statewide fish consumption advisory for estuarine and marine

waters due to contamination by PCBs and dioxin (NJDEP 2006c). The advisory recommends:

- The general public reduce consumption of American eel, bluefish, and striped bass and that high-risk individuals avoid consuming these species.
- All individuals avoid consumption of the hepatopancreas of American lobster.

Site-Related Contamination

During several site investigations conducted between 1995 and 2003, groundwater and soil samples were collected from the White Swan and Sun Cleaners properties (GES 2000, 2001; Weston 2003), and surface water samples were collected from Wreck Pond and Watson Creek. All of the samples were analyzed for VOCs, which are the primary contaminants of concern to NOAA.

Table 2 summarizes the maximum concentrations of contaminants of concern to NOAA detected during the site investigations and compares them to relevant screening guidelines. Site-specific or regionally specific screening guidelines are always included when available. In the absence of such guidance, the screening guidelines for groundwater and surface water are the ambient water quality criteria (AWQC; USEPA 2006), and the screening guidelines for soil are the Canadian Council of Ministers of the Environment (CCME) soil guidelines for agricultural land uses (CCME 2006). Exceptions to these screening guidelines, if any, are noted in Table 2. Only maximum concentrations that exceeded relevant screening guidelines or for which no screening guidelines are currently available, are discussed below. When known, the general sampling locations are also provided.

Table 2. Maximum concentrations of contaminants of concern to NOAA at the White Swan Laundry and Cleaner Inc. site (GES 2000, 2001; Weston 2003). Contaminant values in bold exceed or are equal to screening guidelines.

	Soil (mg/kg)			Water (µg/L)			
Contaminant	White Swan Laundry and Cleaners Soil	Sun Cleaners Soil	CCME Soil Guidelines[a]	White Swan Laundry and Cleaners Groundwater	Sun Cleaners Ground-water	Surface Water	AWQC[b]
VOCs							
Trichloroethylene (TCE)	ND	ND	0.01	760	28	ND	21,900[c]
Tetrachloroethylene (PCE)	**15,000**	**7,400**	0.1	**120,000**	**200,000**	**1,000**	840[c]
Cis-1,2-dichloroethene (cis-DCE)	ND	ND	NA	210	ND	ND	11,600[c,d]

a: Canadian Council of Ministers of the Environment (CCME) soil quality guidelines for the protection of environmental and human health, agricultural uses (CCME 2006).
b: Ambient water quality criteria for the protection of aquatic organisms (USEPA 2006). Marine chronic criteria presented.
c: Chronic criterion not available; acute criterion presented.
d: Lowest Observable Effect Level (LOEL) (USEPA 1986).
NA: Screening guidelines not available.
ND: Not detected.

Surface Water

One VOC was detected in surface water samples collected from the site at a maximum concentration that exceeded the screening guideline. The maximum concentration of PCE, which was detected in a sample collected from Wreck Pond slightly exceeded the AWQC.

Groundwater

One VOC was detected in groundwater samples collected from both the White Swan and Sun Cleaners properties at maximum concentrations that exceeded the screening guideline. The maximum concentrations of PCE in monitoring well samples from both the White Swan and Sun Cleaners properties exceeded the AWQC by two orders of magnitude.

Soil

One VOC was detected in soil samples collected from both the White Swan and Sun Cleaners properties at maximum concentrations that exceeded the screening guideline. The maximum concentration of PCE detected at the White Swan property exceeded the CCME environmental quality guideline for agricultural land uses by five orders of magnitude. The maximum concentration of PCE detected at the Sun Cleaners property exceeded the CCME soil guideline by four orders of magnitude.

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