

Chronology List of Events In Support of HR299 Blue Water Navy Veterans Act of 2018

Summary: A thorough examination of the evidence leading up to and including decision making processes is found to have been hampered by the VA and the respective Courts as new and material evidence that may have altered the original outcome of such decisions was released at future dates. i.e., Haas v. Nicholson, Veterans and Agent Orange Updates

Some key highlights that hampered the process but are now available:

- The findings of naval water barges providing potable water to ships in port, as well as the capability of ships to transfer water at sea; Institute of Medicine advised in their 2011 publication that if a ship received water from Vietnam, they would be eligible for presumptive exposure to herbicides for that day
- Institute of Medicine 2008 declaration “The current [definition of Vietnam service](#) is not supported by existing data.”
- Given the available evidence, the committee (Institute of Medicine) recommends that members of the Blue Water Navy [should not be excluded](#) from the set of Vietnam-era veterans with presumed herbicide exposure.
- Institute of Medicine confirmation of the shipboard water distillation systems enrichment of dioxin by ten times as based on the Australian Mortality Study of 2005
- Institute of Medicine revelation that there was no dioxin contamination records available for any branch of service operating in support of the Vietnam War
- [Declaration of Robinson Hordoir, Ph.D.](#) Plume Study of Mekong Delta and it's affects
- No database of ships to show [daily operations off the coast of South Vietnam](#) with Deck Logs linked to the events
- The Present Day Status of Coral Reefs in Nha Trang (2002)
- Hatfield Group Inc [Agent Orange Reports](#) of soil, water, fish, breast milk samples provided in 2005/2006.
- Ships found to be operating water distillation systems at anchorage in port while making preparations to get underway
- USAID Remediation Efforts in Vietnam to clean up dioxin contaminated areas at old US military facilities
- Declassification of Project Popeye ~ extension of monsoon seas with seeding of clouds
- And more.

The Department of Veterans Affairs promulgates a VA Clinicians Guide that provides recommended statements to be used to provide a NEXUS, or link, to a veterans military service which further allows, at a minimum the phrase, “at least as likely as not” (equal to or greater than 50%)” that the current chronic disability was indeed caused by military service.

Given the chronological listing of events as they relate to our military service, we can easily substantiate presumptive exposure to herbicides used throughout South Vietnam as concurred by the former Institute of Medicine, yet the law currently does not support our contention. Passage of HR299 would remedy that. While others may argue there is more than enough information to link their military exposure directly to herbicides given the requirement of a greater than 50% chance of exposure with a properly drafted private medical opinion even today.

28 February 1961 - [Vietnam era](#) for Veterans who served in the Republic of Vietnam during that period;

[09 January 1962](#) - VA presumes that Veterans were exposed to Agent Orange or other herbicides if they served “In Vietnam anytime between January 9, 1962 and May 7, 1975, including brief **visits ashore** or service aboard a ship that operated on the **inland waterways** of Vietnam.”

30 October 1962 – [pg 103](#). ARFCOSTA Saigon established.

1965 – Official Navy video of “Replenishment at Sea” – [1965 CONREP US Navy 21690](#)

March 1965 – [Operation Market Time](#); established as a coastal surveillance operation to prevent seaborne infiltration of supplies from North Vietnam (NVN) into South Vietnam (SVN).

24 April 1965 – [Executive Order 11216](#) – Designation of Vietnam and Waters adjacent thereto as a Combat Zone for the Purposes of Section 112 of the Internal Revenue Code of 1954

[June 1965](#) – Navy commenced offloaded operations at NSA Danang and began providing logistic support for Marines.

[15 October 1965](#) – NSA Danang received its commission.

- First problem to overcome was the conversion of the soft beaches into hardstand cargo off-loading ramps.
- Charting the harbor for sandbars and marking the erratic channel was the next order of business.

[November 1965](#) – 500 men moved into Camp Tien Sha had neither electricity, running water, nor sewage.

[November 1965](#) – off-loading LCU's (utility landing craft) and LST's (tank landing ship) and lighterage transferring supplies from larger ships in the harbor.

March 1966 – [National Archive CONGA](#) database list South Vietnam naval gunfire support missions by ship

15 July 1966 – [pg 52](#). ARFCOSTA Subic Bay facilitated both use of carrier-onboard-delivery (COD) flights to service ships at sea and designation of a COD's pilot or co-pilot as the mission courier.

05 September 1966 – [pg 99](#) ARFCOSTA Danang established as sub-station to Saigon

[15 October 1966](#) – NSA Danang the Thong Nhat Deep Water Pier complex (2 – 600 x 90ft piers) was dedicated. USS Aludra was the first alongside the new piers.

[October 1966](#) – Project Popeye

- [Seventh Air Force wrote a Popeye plan](#) for utilizing the technique as an adjunct to the weapons systems then being employed in the theater. The operations plan, based on Air Force control and execution of the entire operation, was approved by COMUSMACV and by the Joint Chiefs of Staff, who forwarded it to

higher authority on 5 December 1966, with approval to implement the project expected in early 1967.

- The Air Force continued its attempts at weather modification after the initial Popeye tests, flying rain-making missions during 6 southwest monsoon seasons before the project ended on 5 July 1972.
- 82% of the clouds seeded produced rain within a brief period after seeding—a percentage appreciably higher than normal expectation in the absence of seeding.
- The amount of rainfall induced by seeding is believed to have been sufficient to have contributed substantially to rendering vehicular routes in this area inoperable. Since the end of the rainy season, the communists have failed to undertake route repairs and there has been no vehicular traffic.
- In one instance, the rainfall continued as the cloud moved eastward across the Vietnam border and inundated a U.S. Special Forces camp with nine inches of rain in four hours.
- Downstream from the areas of rainfall, there will be effects on the water level, diminishing as tributaries broaden toward the Mekong. Unless monitored to limit induced rainfall to the amounts needed to attain project objectives, intensive sustained operations could produce serious localized flooding. Even at the required tempo of operations, it seems probable that there will be changes in normal water flow. Farmers, for example, who normally move during the dry season across country, through dry stream beds or through shallow fords, may be inconvenienced if not endangered by the unexpected rise of water. In view of the uncertainty as to the extent to which wet-season conditions are likely to be created, we should assume in acting on the DOD proposal that there will be appreciable consequences outside the target areas.
- [Rainmaking Is Used As Weapon by U.S.](#) ~ New York Times
- [March 20, 1967, the “operational phase” of Popeye began.](#)

NSA Danang – [COMNAVFORV Monthly Summaries](#) Water Barges YW-101, YW-115, YW-128 in Vung Tau was YW-126

- [Feb 1967](#) – 61 port visits, ships provided 791,749 gal water
- [Mar 1967](#) – 85 port visits, ships provided 1,063,478 gal water
- [Apr 1967](#) – 100 port visits, ships provided 962,131 gal water
- [May 1967](#) – 122 port visits, ships provided 1,000,000 gal water
- [July 1967](#) – 134 visits, almost 1.5M diesel, and 3,000,000 gals potable water.

1967 – [USS Sanctuary AH-17](#) Cruise Book

- Pg 184 Describes the water distillation plant in operation while making preparations for getting underway from anchorage in Danang Harbor

July 1967 – [All Hands](#) magazine shows USS Sacramento AOE-1 delivering thousands of gallons of potable water to ships out at sea.

October 1967 – [COMNAVFORV Monthly Summary](#):

- Pg 69 The dredging operation in the mouth of the Cua Viet River, which had become unnavigable by LSTs because of monsoon rains, strong river current and silting, was also hampered by adverse weather conditions. The dredging was continuing however, and on 21 Oct an LST carrying a light load arrived at the Cu Viet LST ramp indicating that a limited LST capability had been restored.
- Pg 91 On 4 October USNS Geiger (T-AP 197) with 1,700 ROK troops aboard ran hard aground in 13 feet of water in Danang Harbor. On 6 October an Army barge commenced dredging sand and mud from the port side and the area around Geiger's bow. Shortly after midnight on the 7th, with the assistance of USS Abnaki ATF-93 and several harbor tugs, Geiger was refloated.

01 December 1967 – [pg 99](#). ARFCOSTA Cam Rahn Bay established.

May 1968 – page 82; [A new dam on Monkey Mountain](#) was completed and an effort was begun to store as much water as possible in this 1,900,000 gallon storage site.

15 Aug – 2 Sep 1969 – A review of [Fort Detrick Trip to Republic of Vietnam](#) to assist in technical aspects of defoliation program and recognition of crop destruction due to herbicides. Found leaky valves on UC-123 spray applicators

October 1969 – [VRC-30](#) squadron C-1A's and crews operated from Danang in support of CTF-77.

1970 – [Changes a history 1970](#) – a book that documents NSA Danang.

- NSA Danang – Operations Department – Throughout I Corps, maintained POL fuel lines, conducted salvage and dredging operations, exercised operational control over EOD/UDT teams, and conducted tactical boat operations for amphibious beachings of troops in support of combat operations. Provided complete coastal meteorological services for I and II Corps, and controlled the command's C-117 airplane for command support and Market Time operations.

[21 August 1970](#) – Z-Gram #11 Enlisted Requests to Remain on Sea Duty: From CNO

23 August 1970 – [COMNAVFORV Monthly Summary for June 1970](#)

- It is not uncommon for ships and boats operating in the waters of Vietnam to inadvertently ground. Common causes of such situations are rapidly changing bottom conditions compounded by lack of navigational aids, or in some cases, operating in areas which have never been adequately surveyed.
- 05 June 1970 SS American Hawk, went aground in Danang Harbor 500 yards from the Harbor Entrance Control Post
- 05 June 1970 USS Jennings County LST-846 temporary grounding at 10 12.8N 106 52.1E while transiting the Banc Soirap enroute from Vung Tau to the My Tho River.
- 13 June 1970 USS Hunterdon County LST-838 grounded near the mouth of the Bassac River at position 09 27.8N 106 27E.

1971 – 1975 [USS Enterprise CVAN-65 History](#)

- While C-1A COD support from Da Nang proved reliable, a ship the size of *Enterprise* required three to four daily trips. In addition, 300,000 lb of mail was carried by HC-1 Det 4 during this WestPac, requiring 920 transfers, as well as 3,210 passengers.
- 12 December 1971 – C-2A BuNo 152793 VRC-50 Det Cubi Point, took off from Cubi Point, bound for *Enterprise*, routed via Tan Son Nhut, for a logistic support mission.

[07 May 1975](#) – Final date of Vietnam War.

14 August 1988 – [Obituaries: Elmo R. Zumwalt III; Father Ordered Agent Orange Use in Vietnam](#)

05 May 1990 – Admiral Zumwalt's [Report to Secretary of the Department of Veterans Affairs on the Association Between Adverse Health Effects and Exposure to Agent Orange.](#)

September 1990 – [The Association of Selected Cancers with Service in the U.S. Military in Vietnam](#) – Final Report

- Navy veterans who served on ocean-going vessels tended to be at higher risk (OR = 2.17) than Vietnam veterans who were based on land (OR = 1.30), and Vietnam veterans who served in "I" Corps, the region of heaviest Agent Orange use, tended to be at somewhat lower risk than Vietnam veteran who served in other regions.
- Study did not take into consideration the shipboard water distillation system that is now known to have the capability of [enrichment of dioxin](#) by ten times that was published by NAS in 2011.

26 October 1990 – [Federal Register](#) DEPARTMENT OF VETERANS AFFAIRS 38 CFR Parts 3 and 4 RIN 2900-AE68 Claims Based on Service in Vietnam

AGENCY: Department of Veterans Affairs. ACTION: Final regulations.

- [§ 3.313](#) Claims based on service in Vietnam.

(a) Service in Vietnam. "Service in Vietnam" includes service in the waters offshore, or service in other locations if the conditions of service involved duty or visitation in Vietnam.

(b) Service connection based on service in Vietnam. Service in Vietnam during the Vietnam Era together with the development of [non-Hodgkin's lymphoma](#) manifested subsequent to such service is sufficient to establish service connection for that disease.

(Authority: 38 U.S.C. 210©(1))

1993 – [O.G.C. Precedent 7-93](#) – "Service in Vietnam" Under 38 C.F.R. § 3.313 addressed to their Board of Veterans Appeals

18 February 1994 – [O.G.C. Precedent 5-94](#) Effective Date of Service Connection for Non-Hodgkin's Lymphoma Under 38 C.F.R. § 3.313

1997 – [Hatfield Agent Orange Reports and Presentations](#)

- Bien Hoa The maximum soil dioxin level was observed in a sample collected at a depth of 60-90 cm in the Z1 Area, which exhibited extremely high TEQ (262,000 ppt) and TCDD (259,000 ppt) concentrations. Samples collected from different depths at the same site all exhibited TEQ concentrations \geq 26,400 ppt (with over 91% TCDD).
- Danang The maximum soil TEQ concentration recorded was 365,000 ppt, 365 times Vietnamese and international recommended guidelines, from samples collected from the former Mixing and Loading Area
- [Page 1-18](#); Dioxins in soil can pose a lingering threat to human health. Paustenbach et al. (1992) has indicated that the half-life of dioxins in subsurface soils can extend to 100 years. Therefore, any substantial disturbance of the integrity of soil layers has the potential of re-mobilizing dioxin, and ultimately may lead to its integration into the human food chain.

January 2001 – [2,3,7,8-Tetrachlorodibenzo-p-dioxin](#) (TCDD) Based on the new information, the listing was revised to known to be a human carcinogen in the January 2001 addendum to the Ninth Report on Carcinogens.

March 2002 – [VA Clinicians Guide](#)

- 1.16 How do I give an opinion for nexus relationship to a military incident?
- When asked to give an opinion as to whether a condition is related to a specific incident during military service, the opinion should be expressed as follows:
 - 1. “is due to” (100% sure)
 - 2. “more likely than not” (greater than 50%)
 - 3. “at least as likely as not” (equal to or greater than 50%)
 - 4. “not at least as likely as not” (less than 50%)
 - 5. “is not due to” (0%)

10 October 2003 – [Present-Day State of Coral Reefs of Nha Trang Bay](#) (Southern Vietnam) and Possible Reasons for the Disturbance of Habitats of Scleractinian Corals

25 July 2005 – [NAVMED P-5010-6](#) Chapter 6 Manual of Naval Preventive Medicine Water Supply Afloat page 6-2 e. Potable water is used aboard ship for drinking, cooking, laundry, medical, personal hygiene, and other purposes.

2005 – [The Third Vietnam Veterans Mortality Study 2005](#) (Australian Government Department of Veterans Affairs)

- This series of focus groups were initiated to obtain a better understanding of the experiences on board ships serving in the Vietnam operational area. The emphasis on the ship environment was in response to previous studies which indicated a potential for exposure to dioxin contaminated potable water and a higher than expected mortality of Navy personnel.
- For Navy vessels, water distillation occurred in Vietnamese waters and in the tropical conditions there was a large consumption of this potable water by personnel in their food and drink. The men were exposed to numerous occupational hazards common to the Navy conditions at the time but the extent and nature of these exposures varied by the ship on which they served.

24 October 2006 – A large [muddy plume of sediment flows from the Mekong River Delta](#) – courtesy NASA.

[Veterans and Agent Orange: Update 2008](#) (2009)

- After considering information related to the Department of Veterans Affairs (VA) question about hairy cell leukemia, the committee concluded that not just hairy cell leukemia – like chronic lymphoid leukemia (CLL) – but [all chronic B-cell leukemias](#) belong in the category of “sufficient evidence of an association” with Hodgkin’s disease and non-Hodgkin’s lymphoma (NHL).
- The current [definition of Vietnam service](#) is not supported by existing data. The epidemiologic evidence itself supports a broader definition of Vietnam service to service as a surrogate for presumed exposure to Agent Orange or other herbicides sprayed in Vietnam. For instance the Centers for Disease Control and Prevention (CDC, 1990) study of selected cancers in Vietnam veterans found that the risk of the “classic AO cancer” NHL was highest and most significant in Blue Water Navy veterans.
- Given the available evidence, the committee recommends that members of the Blue Water Navy [should not be excluded](#) from the set of Vietnam-era veterans with presumed herbicide exposure.
- The IOM Committee endorses the “Stellman model” (See [Spray Map](#))

2009 - [Mud, Muscle, and Miracles](#) 2nd Edition

- Pg 272 The mundane marine task of dredging had particular importance in Vietnam. The Mekong River and the many branches that form its estuary carry a huge amount of silt; therefore, deposits of silt constantly change the depth of the rivers and make navigation hazardous. As constant dredging was necessary to keep traffic moving and to keep open the ports and bases supplied by the river, dredges were operated in Vietnam by the United States and many other nations.

07 May 2009 - [DEPARTMENT OF VETERANS AFFAIRS 38 CFR Part 3 RIN 2900-AN01](#)

Presumptive Service Connection for Disease Associated With Exposure to Certain Herbicide Agents: AL Amyloidosis

AGENCY: Department of Veterans Affairs.

ACTION: Final rule.

Much of this data comes from Institute of Medicine study entitled [Veterans and Agent Orange Update 2006](#)

- This amendment is necessary to implement a decision of the Secretary of Veterans Affairs that there is a positive association between exposure to herbicides used in the Republic of Vietnam during the Vietnam era and the subsequent development of AL amyloidosis. The intended effect of this amendment is to establish presumptive service connection for AL amyloidosis based on herbicide exposure.
- [Veterans with continuous service of 90 days or more:](#) Veterans diagnosed with amyotrophic lateral sclerosis (ALS)/Lou Gehrig's disease at any time after discharge or release from qualifying active service is sufficient to establish service connection for the disease, if the veteran had active, continuous service of 90 days or more.

04 December 2009 - This interactive map is based on the [Herbicide Exposure Assessment](#)-Vietnam database developed by Jeanne Stellman, professor emeritus at Columbia University's school of public health, and Columbia epidemiology professor Steven Stellman.

2010 - [USAID completed an Environmental Assessment of the Danang Airport](#) that estimated the volume of dioxin contaminated soil and sediment at the airport and evaluated multiple remediation strategies.

17 June 2010 – [SECNAV provides list](#) of Navy ships that served off the coast of Vietnam from 1962 to 1975.

2011 - [Blue Water Navy Vietnam Veterans and Agent Orange Exposure \(2011\)](#)

- [Enrichment 10 times of TCDD](#) in shipboard water distillation system
- When Congress passed the Agent Orange Act of 1991 (Public Law 102-4), which provided for presumption of service connections for diseases associated with exposure to certain herbicide agents, initially the law was interpreted to apply to all service men and women deployed to Vietnam including members of the Blue Water Navy. But in 2002, the Department of Veterans Affairs (VA) took the position that for a Vietnam veteran to be presumed to have been exposed to Agent Orange, the veteran must demonstrate that he or she actually set foot in Vietnam, and in 2008, that VA position was upheld by the US Court of Appeals for the Federal Circuit. This position effectively excluded most Blue Water Navy veterans from receiving a presumption of service connection for diseases associated with exposure to herbicides.
- If a ship docked and [took on potable water from Vietnam](#), crewmembers would have been eligible for a presumption of herbicide exposure only for the time the ship was docked (VA, 2008).
- After examining a wealth of information on possible routes of exposure, the committee concluded that it would not be possible to determine Agent Orange-associated TCDD concentrations in the Vietnamese environment. This lack of information makes it [impossible to quantify exposures for Blue Water and Brown Water Navy sailors and, so far, for ground troops](#) as well.
- [Map](#) of Sprayed areas of South Vietnam; provided by Hatfield Group Inc for use.
- In the late 1970s, [a Chicago benefits counselor](#) in the Veterans' Administration (now the Department of Veterans Affairs) began to suspect that Agent Orange was causing health problems in Vietnam veterans, and her testimony in the 1977 televised documentary [Agent Orange: The Deadly Fog](#) increased the general public's and veterans' awareness of the issue.

- [In 2001](#), Blue Water Navy Vietnam veteran Jonathan Haas first sought a presumptive service connection from his VA regional office for type II diabetes. Haas had served on the ammunition ship *USS Mount Katmai* off the coast of Vietnam during August 1967–April 1969. He had never gone ashore, and his ship had never gone into port in Vietnam, but he claimed that the *Mount Katmai* had sailed as close as 100 ft from the Vietnamese coast and had been “engulfed by an Agent Orange cloud” and thus argued that he had been exposed (*Haas v. Peake*. 2008. Jonathan L. Haas, Claimant-Appellee v. James B. Peake, Secretary of Veterans Affairs, Respondent-Appellant. {No access to Australia’s Mortality Study, nor Institute of Medicine’s confirmation shipboard water distillation systems enriched dioxin ten times.})
- No measurements of TCDD concentrations in seawater were collected during the Vietnam conflict, so it is not possible to ascertain the extent to which drinking water on US vessels may have been contaminated through distillation processes. However, it seems likely that vessels with such distillation processes that traveled near land or even at some distance from river deltas would periodically collect water that contained dioxin. [Thus, a presumption of exposure of military personnel serving on those vessels is not unreasonable.](#) (IOM, 2009)

2014 – [Veterans and Agent Orange Update \(2014\)](#) Chapter 8 Cancers

- ***There is sufficient evidence of an association with the COIs and soft tissue sarcomas and B-cell lymphomas (Hodgkin lymphoma, non-Hodgkin lymphomas, chronic lymphocytic leukemia, hairy cell leukemia).***
- The data reported are for 2008–2012 and are from the most recent dataset available (NCI, 2015). (2013 VHA revamped Priority Group 8 and made new enrollments based on HUD income thresholds; which would have skewed their data.)

25 February 2015 – [Gray V. McDonald](#) United States Court of Appeals for Veterans Claims

03 July 2015 - [ANALYSIS OF EMBAYED BEACH PLANFORM STABILITY IN DANANG, VIETNAM](#)

- It is hypothesized that the discrepancies between predicted and observed behavior of the embayed beaches in Da Nang Bay could possibly be attributed to a) the seasonal availability of sediment from the two rivers discharging in Da Nang Bay and b) the seasonality of the dominant wave direction that mainly determines the planform stability resulting from the PBSE. The aim of this study focuses on point b) and is twofold: 1) to obtain more insight into the planform stability of the beaches in Da Nang Bay by applying a more advanced model to predict, the wave climate and 2) to investigate seasonal variations in dominant wave direction affect the planform stability.
- There are two seasonal river discharging into Da Nang Bay, the Cu De River from the west and the Song Han River from the south
- Due to the NE monsoon regimes, waves in the winter season (from September to March) were dominated by the ENE (76.74%) with wave heights ranging between 0.5 and 3.0 m and periods between 8 and 10 s.
- In the summer months (April to August), the waves were characterized by a bi-directional configuration.

03 November 2016 – [14th Report on Carcinogens](#) released.

- [2,3,7,8-Tetrachlorodibenzo-p-dioxin](#) - It is insoluble in water and very slightly soluble in o-dichlorobenzene, chlorobenzene, benzene, chloroform, acetone, n-octanol, methanol, and lard oil.
- 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is known to be a human carcinogen based on sufficient evidence of carcinogenicity from studies in humans, both epidemiological and on the mechanism of carcinogenesis.

2017-1821 [ALFRED PROCOPIO, JR., Claimant-Appellant v. ROBERT WILKIE, SECRETARY OF VETERANS AFFAIRS](#)

- Does the phrase “served in the Republic of Vietnam” in 38 U.S.C. § 1116 unambiguously include service in offshore waters within the legally recognized territorial limits of the Republic of Vietnam, regardless of whether such service included presence on or within the landmass of the Republic of Vietnam?
 - i. What role, if any, does the proclimant canon play in this analysis?

01 April to 30 June 2018 – [USAID Remediation Danang Air Terminal Progress Report](#):

14 August 2018 – VA [U.S. Navy and Coast Guard ships that operated in Vietnam](#)

21 August 2018 – [Ranch Hand Missions Flown Along the Coast of Vietnam, Ports, and the Mekong Delta Region](#)

References:

[Currents](#) - Oceanic currents are driven by several factors. One is the rise and fall of the tides, which is driven by the gravitational attraction of the sun and moon on Earth's oceans. Tides create a current in the oceans, near the shore, and in bays and estuaries along the coast. These are called "tidal currents." Tidal currents are the only type of currents that change in a very regular pattern and can be predicted for future dates.

A second factor that drives ocean currents is wind. Winds drive currents that are at or near the ocean's surface. These currents are generally measured in meters per second or in knots (1 knot = 1.15 miles per hour or 1.85 kilometers per hour). Winds drive currents near coastal areas on a localized scale, and in the open ocean on a global scale.

A third factor that drives currents is thermohaline circulation - a process driven by density differences in water due to temperature (thermo) and salinity (haline) in different parts of the ocean. Currents driven by thermohaline circulation occur at both deep and shallow ocean levels and move much slower than tidal or surface currents.

Vietnam

[Average Rainfall](#)

April 2.75 inches

May 6.73 inches

June 8.87 inches

July 10.30 inches

August 10.75 inches

September 10.44 inches

October 8.79 inches

November 6.05 inches

December 2.65 inches

Now to look at the Spray missions and determine the amounts sprayed

during the rainy season; keeping in mind TCDD is insoluble in water. We continue

to focus on erosion of the banks along the rivers and the coastline, yet now we have the

opportunity with the missions in front of us to look at the amount of runoff, not to mention

the spray mist in prevailing winds and estuarine waterways to sea.