

A. *The Period from 1950 to 1955*

Beginning in 1950, Beech leased the four hangars and several buildings at the Site for various production and assembly activities. From 1950 through 1954 or 1955, Beech utilized the Site in connection with the disassembly of war-weary Model 18 aircraft and the refurbishment of parts from those aircraft, and the assembly of portable starter generators. Beech used Hangar 1 for the disassembly of the MD-18 aircraft; Hangar 2 for the assembly of starter generators; and Hangar 4 for the storage of parts and shipping crate components. As part of the disassembly and refurbishment process, Beech employees stripped paint from aircraft wings so that those wings could be rebuilt. Beech's paint-stripping operations took place in an annex at the northwest corner of Hangar 1—a small building attached to the northwest corner of the hangar referred to by various witnesses as the "finger" building or the "Hangar 1 annex." In connection with its paint-stripping operations, Beech utilized a phenolic-based paint stripper known as Turco 3535. Beech employees applied the stripper to the wings and the stripper would readily flow onto the floor where it was then washed into a French drainage system by the door of the annex. The drainage system ultimately discharged the paint-stripper waste from the annex to a pond to the north of Hangar 1.¹⁹

Although the United States contends that Beech's disassembly of MD-18 aircraft utilized a TCE degreaser to remove dirt and oil from aircraft parts, no evidence was presented from

¹⁹Paint-stripper waste was discharged to the pond until August 1953. At that time, it was discovered that the well of a neighboring farmer had become polluted and the drain line redirected waste to several "Imhoff tanks" on the property.

which the court could reasonably infer that Beech's activities during this timeframe involved the use of TCE. Indeed, none of the Beech employees who testified and who worked at the Site during the early 1950s recalled the use of a vapor degreaser in connection with the disassembly of MD-18s or any other activity conducted by Beech during this timeframe. Moreover, no evidence was presented indicating that Beech utilized TCE in any other manner in connection with the disassembly of MD-18s or any other activity conducted by Beech during this timeframe.

B. The Period from 1955 through 1959

Beginning in 1955, Beech dedicated its entire Herington facility to the production of jettisonable metal fuel tanks for military aircraft. The fuel tanks were manufactured in Hangar 1 and it is undisputed that, as part of that manufacturing process, aluminum was cleaned in a TCE vapor degreaser located in the southwest corner of Hangar 1.²⁰ This degreaser was approximately three and one-half feet in width, fourteen feet in length and six feet in depth.

²⁰The United States contends that the evidence demonstrates that a second TCE vapor degreaser was utilized in connection with Hangar 1 operations and that this degreaser was located on the conveyORIZED line in a small building or a lean-to on the north side of the hangar. The court is not persuaded by this evidence. While former Beech employees John McVicker and Ken Schmedeman both testified to the presence of a "degreaser" in the lean-to, both also testified that the fumes emanating from that tank were sufficiently "toxic" to require the use of ventilation fans and render employees very sick if the fans were not operating. According to Edward Seiwert, a former Beech process chemist during the relevant time period, the tank on the conveyORIZED line requiring the use of the ventilation system used "a very dangerous and aggressive acid combination" and expelled nitric acid fumes. That tank was not a vapor degreaser but was used to deoxidize aluminum prior to spot welding. The court is persuaded, then, that the tank described as a "degreaser" by Msrs. McVicker and Schmedeman was, in fact, the deoxidizer described by Mr. Seiwert.

During this same timeframe, Beech used Hangar 4 for the production of steel shipping containers for jettisonable fuel tanks. As part of that production process, it is undisputed that Beech utilized a TCE vapor degreaser that was located inside Hangar 4 along the west wall of the hangar and slightly to the south. It is also undisputed that this particular vapor degreaser was larger than the vapor degreaser in Hangar 1, measuring four feet in width, sixteen feet in length and six feet in depth. Unlike the vapor degreaser in Hangar 1 however, the vapor degreaser in Hangar 4 was mounted in a subsurface concrete vault extending twelve feet below the ground level of the hangar. Both vapor degreasers utilized large quantities of TCE over the course of their operation.

Utilizing TCE, of course, is not the same as releasing that TCE to the environment. Nonetheless, because the court is not persuaded that the Army used TCE at HAAF and because it is undisputed that Beech did use TCE during its operations at the Site,²¹ the court believes that Beech, more likely than not, released TCE to the environment during its operations. This conclusion, as explained below, is further supported by the location of the source areas of TCE contamination as well as numerous plausible mechanisms of release at those source areas—all of which are consistent with the location and operation of Beech's vapor degreasers.

C. Source Areas of Contamination

²¹As noted earlier, while other commercial and industrial tenants occupied the Site over the years, it is undisputed that the activities of these tenants have no bearing on the issues in this case.

Both parties' experts, through the analysis of extensive soil and groundwater sampling data gathered during the various Site investigations, agree that there are two general areas of release at the Site—Hangar 4 and Hangar 1.²² Within those two general areas, the experts further agree on the presence and location of three specific source areas of contamination (or “hot spots”) at the Site. Two of those hot spots are located at Hangar 4. The first is located at the west wall of Hangar 4, exterior to the building and underneath the hangar (near the location of Beech's vapor degreaser along the west wall on the interior of the hangar) and the second is located just to the southeast of Hangar 4 at the head of a drainage ditch. The third hot spot at the Site, located at Hangar 1 and reflected in Exhibits 80 and 1055, is a few feet north of the north wall of Hangar 1 directly adjacent to the finger building (in other words, directly east of the finger building) which extends northward from the northwest corner of Hangar 1.

The parties dispute whether an additional hot spot, reflected in Exhibits 198 and 82,²³ exists in the vicinity of Hangar 1 adjacent to the Army's spark plug cleaning building (also known as Building 514), which is located just northwest of the finger building. See Exhibit 186 (reflecting the location of Building 514 relative to Hangar 1 and the finger building). Two of

²²Both parties presented evidence concerning the relative magnitude of the releases at Hangar 1 and Hangar 4 and the relative contribution to the contaminant plume as between the releases at Hangar 1 and the releases at Hangar 4. As this evidence goes primarily to the issue of allocation and the court does not reach that issue, the court does not render any findings with respect to this evidence.

²³These exhibits are computer-generated contour maps depicting concentrations of vinyl chloride in soil samples. As will be explained, vinyl chloride is a degradation product of TCE and no one disputes that the presence of vinyl chloride reflected in these exhibits came from the degradation of TCE originally released at that location.

Raytheon's experts, Peter Mesard and Richard Lewis, both of whom are geologists with expertise in hydrogeology, opined that a hot spot or source area exists at Building 514 and both experts based that opinion primarily on high concentrations of TCE degradation products reflected at one specific depth in a single soil sample, Boring P-10D. On the other hand, the United States' expert, John Robertson, a hydrologist, testified that he believed there was only one source area associated with Hangar 1 and he questioned the soundness of relying on a single data point as evidence of a source area.

According to Mr. Robertson, a composite view of all the data points in the vicinity north and northwest of Hangar 1 reflects a pattern of the highest concentrations of contaminants at all depths at the single source area near the finger building and then spreading laterally and vertically from that hot spot such that there is a center zone of high contamination with a halo effect spreading downward and outward from that center zone. While Mr. Robertson conceded that Boring P-10D depicted higher concentrations of degradation products at a certain depth than adjacent data points, he did not believe that that single sample necessarily reflected a release at that location and could be explained, instead, by lateral migration from the central source area near the finger building. The court found Mr. Robertson's testimony on this issue (and, as will be seen, numerous other issues) to be highly credible and the court generally found Mr. Robertson well qualified by both education and experience.²⁴ The court, then, is not persuaded

²⁴Raytheon went to great lengths in its efforts to impeach the credibility of Mr. Robertson. Specifically, Mr. Robertson testified (by affidavit prior to trial and in person at trial) that in his experience he had not come across credible evidence suggesting that the Army used TCE to "wash aircraft" or "wash down aircraft" during World War II. Raytheon

by Raytheon's evidence that a separate source area exists at Building 514 or that a separate release occurred at that location.

D. Timing of Release

Raytheon urged at trial through expert testimony that the composition of the contaminant plume and the relatively shallow subsurface degradation of TCE demonstrate that TCE must have been released at the Site before Beech began its operations at the Site and that, accordingly, the Army necessarily used TCE during its operations.

1. The Contaminant Plume

Sampling results from monitoring wells installed into the uppermost three aquifers beneath the Site—the Cresswell, Stovall and Towanda aquifers—reflect that all three aquifers were contaminated through significant downward and lateral migration of TCE from the source areas at Hangars 4 and 1 trending to the northwest (the predominant groundwater flow direction at this

attempted to impeach Mr. Robertson through evidence admitted in another case involving the Walker Army Airfield—a case in which Mr. Robertson was a witness. In essence, Raytheon confronted Mr. Robertson with evidence presented in that case (evidence with which Mr. Robertson was familiar) that, according to Raytheon, contradicted Mr. Robertson's testimony in this case. The court discerns no contradiction between the evidence presented in the Walker Army Airfield case and Mr. Robertson's testimony here. The evidence presented in the Walker Army Airfield case concerned the use of TCE in connection with degreasing parts on aircraft engines. With respect to washing aircraft, the evidence from the prior case indicated not that aircraft were washed with TCE, but that parts of the aircraft were degreased with TCE and then the TCE was washed off with water.

location) in a distinct contaminant plume as groundwater flows off site.²⁵ Ultimately, the contaminant plume stretches for more than 7 miles. As best reflected in Exhibit 51, the leading edge of the plume (off-site) contains only TCE. Behind that leading edge of TCE, the plume contains a mixture of TCE and its degradation products cis-1, 2-dichlorethylene (DCE) and vinyl chloride.

By way of background, Mssrs. Mesard and Robertson explained that TCE degrades into its "daughter compounds," DCE and vinyl chloride, through a process called reductive dechlorination in which bacteria "dechlorinate" TCE, causing the TCE molecule to lose one chlorine atom and take on one hydrogen atom (forming DCE) and then, sequentially, to lose another chlorine atom and take on an additional hydrogen atom (forming vinyl chloride). The degradation or reductive dechlorination of TCE in the environment occurs readily when certain conditions exist—namely, the presence of a significant carbon source in an anaerobic environment, that is, an environment where no oxygen is present. It is undisputed by the parties that the paint stripper used by Beech in the early 1950s, Turco 3535, is largely composed of phenol and that phenol, in turn, is a superb source of carbon for the degradation of TCE. It is further undisputed that degradation of TCE begins immediately upon introduction of the carbon source.

As explained by Mr. Mesard, TCE, DCE and vinyl chloride are hydrophobic compounds

²⁵As explained at trial by Mr. Robertson, the commonly accepted definition of an aquifer is "a formation that is saturated with water aerially extensive with high enough permeability to yield significant quantities to a well over a sustained period of time." More simply, an aquifer is a geologic formation that readily transmits water.

such that those compounds, in groundwater, will tend to adhere to organic carbon sources within the aquifer itself and, as a result, they move at a slower rate than the flow of groundwater. This concept is referred to as retardation and, among TCE and its degradation products, TCE has a greater affinity for the organic carbon than DCE does (such that TCE will migrate more slowly than DCE) which, in turn, has a greater affinity for the organic carbon than vinyl chloride does (such that DCE will migrate more slowly than vinyl chloride). Mr. Mesard testified that, without exception, vinyl chloride will always travel faster in groundwater than DCE which, in turn, will always travel faster than TCE when those compounds are traveling in the same aquifer. Thus, according to Mr. Mesard, if TCE and its degradation products are released into the groundwater at the same time, one would expect to see, using the race car analogy provided during Mr. Mesard's testimony, vinyl chloride out in front, followed by DCE, followed by TCE.

Because the leading edge of the plume in this case contains only TCE, Mr. Mesard opined that the TCE must have been released to the groundwater prior to the release of phenol. As explained by Mr. Mesard, in his opinion, if the phenol was already present when the TCE was released to the groundwater (for example, if the Army had not released TCE and TCE was released for the first time after Beech's use of Turco 3535), then TCE and its degradation products (recalling that degradation occurs immediately when TCE meets the carbon source) would have migrated from that spot at the same time and, over time, one would expect TCE to lag behind vinyl chloride and DCE in the contaminant plume. Because the contaminant plume in this case reflects the opposite result—with TCE leading the contaminant plume followed by a mix of TCE and its degradation products—Mr. Mesard concludes that the TCE must have had

a "head start" in the race. In other words, according to Mr. Mesard, TCE must have been released to the groundwater prior to Beech's release of phenol, the carbon source. According to Raytheon, then, the Army must have released TCE to the groundwater before Beech released phenol to the groundwater, allowing the "old" TCE to lead the contaminant plume before degradation began.

Mr. Robertson, in his testimony, addressed Mr. Mesard's race car analogy. While Mr. Robertson generally agreed with Mr. Mesard concerning the relative speed of migration of TCE and its degradation products,²⁶ Mr. Robertson explained that, in his opinion, Mr. Mesard's methodology is flawed because it assumes the existence of only one race track with Hangar 1 (where Beech used phenol) as the only starting gate. According to Mr. Robertson, the Site in fact has two race tracks with two starting gates—Hangar 4 and Hangar 1. Mr. Robertson opines, ultimately, that the presence of only TCE at the leading edge of the plume is most credibly due to Hangar 4 being the starting place for that contamination. As explained by Mr. Robertson, TCE released at Hangar 4 would have reached the groundwater and started migrating through the aquifers much more quickly than TCE released at Hangar 1 (and its degradation products in light of the carbon source there) would have reached the groundwater in light of the difference in the nature of the soils at those hangars.

²⁶Mr. Robertson testified that in many circumstances TCE will migrate more slowly than its degradation products. He cautioned, however, that the relative migration rates of TCE and its degradation products is a complex physical and chemical process governed by not only the retardation effects of carbon in the aquifer but a variety of other processes not discussed by Mr. Mesard because the data available at the Site is insufficient to measure the effect of those processes on the migration rates of TCE and its degradation products.

Evidence was presented by both parties concerning the subsurface geology in the vicinities of Hangar 4 and Hangar 1. The area to the immediate north of Hangar 1 sits on at least 15 feet of overburden (a layer of soil and fill). It is undisputed that the soils in that overburden contain clay.²⁷ While the parties dispute to some extent how clay-rich those soils are, Raytheon's contractor Shaw conducted soil vapor extraction (SVE) tests in support of Raytheon's efforts to perform in-situ remediation rather than excavation and Shaw concluded that "SVE may not be technically feasible due to the high silt and clay content of the soils" north of Hangar 1. The overburden, in turn, sits on weathered or fractured bedrock. At Hangar 4, in contrast, the layer of overburden is much thinner and, in fact, the overburden is virtually nonexistent with respect to the Hangar 4 hot spots. Both Mr. Robertson and Mr. Mesard testified that the bottom of the drainage ditch meets the beginning of weather bedrock (in other words, there is no overburden underlying the end of the drainage ditch). The bottom of the concrete vault housing the degreaser in Hangar 1 sat below the overburden layer and in the layer of weathered bedrock.

The significance of the subsurface geology as it relates to Mr. Mesard's race car theory lies in the relative permeability of the soils underlying Hangar 1 compared to the weathered bedrock. Permeability refers to the ease with which a liquid percolates or flows through rock or soil. The weathered bedrock underlying the release zones at Hangar 4 is much more permeable than the thick layer of clay-containing overburden underlying the release zone at

²⁷The soils to the north of Hangar 1 have been excavated. Nonetheless, the court uses the present tense for clarity and consistency.

Hangar 1—a layer of overburden that contained low-permeability soils. Both parties' experts agreed that a release of TCE at Hangar 4 would readily migrate down through the fractured bedrock to the underlying aquifers. By contrast, a release of TCE at Hangar 1 would take a longer period of time to migrate through the overburden to the weathered bedrock and then ultimately to the underlying aquifers. Indeed, Raytheon's own expert Mr. Lewis testified that the difference in subsurface geology at Hangar 4 and Hangar 1 would cause a release at Hangar 4 to reach the groundwater "months" before a release at Hangar 1 would reach the groundwater.

It is for this reason that the court is not persuaded by Mr. Mesard's race car theory as it pertains to this particular case. Indeed, the court believes that TCE is found at the leading edge of the contaminant plume in the absence of its degradation products not because it was released prior to the release of phenol but because that TCE originated from a Hangar 4 release and, thus, it migrated to the groundwater and through the aquifers before any release of TCE at Hangar 1 (and, ultimately, its degradation products because of the presence of phenol in the soils at Hangar 1) reached the groundwater.

2. Shallow Degradation of TCE

Mr. Mesard also opines that TCE must have been released to the environment prior to the release of phenols because of the shallow subsurface degradation of TCE at Hangar 1. As explained by Mr. Mesard, most of the degradation of TCE in the vicinity of Hangar 1 occurred at shallow depths near the surface of the ground rather than deeper depths. According to Mr. Mesard, the shallow degradation reflects that TCE was already in the soil filling up pore spaces

and the subsequently released phenol was not able to infiltrate into the soils because the pore spaces of those soils were already filled with TCE such that the degradation occurred near the surface. But the court believes that the shallow degradation of TCE near the vicinity of Hangar 1 is due, again, to the low permeability of the soils underlying Hangar 1. Because of the low permeability of those soils, the soils tended to retain liquid and, as a result, that liquid (be it water or contaminants) is found closer to the surface regardless of when released. The court, then, is not persuaded that the shallow degradation of TCE at Hangar 1 is significant with respect to the timing of the release of TCE.

E. Mechanisms of Release

Raytheon contends that Beech did not release TCE to the environment and, instead, Beech recycled the TCE sludge or waste generated from Beech's vapor degreasers by placing that waste into drums and shipping those drums to Wichita for recycling. The sole evidentiary basis for this argument, however, is the testimony of Xury Hole, an analytical chemist employed by Beech at the Site during the relevant time period. Mr. Hole testified that Beech's vapor degreasers were cleaned by maintenance crews on evening shifts or on Saturdays and that, because the cleaning occurred on "off hours," he never actually witnessed the cleaning of the vapor degreasers or the removal of TCE waste from those degreasers.²⁸ While Mr. Hole testified that he believed that the TCE waste removed from the vapor degreasers during cleaning was

²⁸It is undisputed that the vapor degreasers utilized by Beech required periodic cleaning.

placed into drums and sent to Wichita for recycling, he admitted that he never witnessed anyone place spent TCE into drums or ship those drums for recycling. Indeed, Mr. Hole candidly testified that he would not have known if TCE sludge was dumped or otherwise disposed of on-site. The court is not convinced, then, that Beech's TCE waste necessarily was recycled or, at least, that it was always recycled.

In any event, even assuming that Beech recycled TCE waste removed from its vapor degreasers during cleaning, the court is persuaded, as will be explained, that Beech released TCE to the environment through mechanisms other than the literal dumping of TCE sludge onto the ground or into a drain. Indeed, Jeff Gadt, formerly a geologist and project manager with E&E, the firm responsible for conducting the ESI on behalf of EPA, testified that, in his experience, the very use of TCE in connection with vapor degreasing always leads to some degree of contamination because of leaks, spills or poor waste handling procedures. Indeed, Mr. Gadt testified that he has yet to come across a site where TCE was used in connection with a vapor degreaser without leakage.

1. West Wall of Hangar 4

With respect to the release or hot spot at the west wall of Hangar 4 where Beech's vapor degreaser was located, Mr. Robertson testified that he has worked on a large number of projects involving vapor degreasers in industrial facilities and he has never seen a degreaser mounted in a subsurface vault (as the degreaser in Hangar 4 was mounted) that did not have releases associated with the degreaser itself. As explained by Mr. Robertson, the vapor degreaser located

in Hangar 4 was housed inside a concrete vault that extended 12 feet below the surface. The space between the degreaser and the vault walls was supported by steel grates so that workers could stand at the degreaser and perform their operations. The space underneath the steel grates (and, thus, underneath the degreaser inside the vault) was not visible. Thus, TCE leaks and spills that occurred that might otherwise be cleaned up would pass through the grate and inadvertently accumulate underneath the degreaser. Over time, those accumulations of TCE can penetrate the concrete vault and cause releases to the environment.

Mr. Robertson further testified that TCE leaks and spills from the Hangar 4 degreaser could have occurred in a variety of ways. For example, TCE often drips off equipment or parts when that equipment or those parts are pulled out of the degreaser after degreasing. Again, while those drips would typically be wiped up with an above-ground degreaser, the subsurface vault in Hangar 4 would cause any drips to accumulate in the vault below. In addition, as explained by Mr. Robertson, TCE vapors are much heavier than air so that when the degreaser in Hangar 4 was opened, the TCE vapors would likely drift over the edge of the degreaser and literally sink down into the vault. Mr. Robertson also explained that the subsurface vault would mask any slow leak in the degreaser itself such that a slow leak in the degreaser might go unnoticed. Finally, leaks and spills near the degreaser could have resulted from the handling and transfer of clean TCE from a local storage area to the degreaser,²⁹ the handling and transfer of

²⁹While drums of TCE were stored in a warehouse to the northwest of Hangar 1, Xury Hole testified that at any given time at least one drum of clean TCE would be stored very near the degreasers in Hangar 1 and Hangar 4 for ease of access.

TCE waste to a temporary storage location and the removal of spent TCE from the degreaser during cleaning—an operation that is, as described by Mr. Robertson, a “sloppy” one because it necessarily must be done by hand.

Mr. Mesard opined that he did not believe the degreaser caused or contributed to the release at the west wall of Hangar 4. In rendering that opinion, Mr. Mesard conceded that TCE concentrations were detected beneath the concrete vault but attributes those concentrations to cross-contamination from TCE vapors emitting from nearby pure-phase TCE from a surface release at the exterior of the west wall of Hangar 4. While Mr. Mesard’s explanation is certainly a plausible one, it is insufficient, in the court’s mind, to outweigh Mr. Robertson’s testimony concerning the multitude of ways in which TCE is released from a subsurface degreaser. Indeed, even Mr. Lewis testified that there was “no doubt” that TCE was released into the ground from Beech’s use of TCE in the vapor degreaser located in Hangar 4. On balance, then, the court is persuaded that Beech released TCE to the environment at the west wall of Hangar 4 through one or more of the mechanisms described by Mr. Robertson.

2. Drainage Ditch at Hangar 4

With respect to the release or hot spot to the southeast of Hangar 4 at the head of the drainage ditch, Mr. Robertson testified to his belief that this release was caused by Beech’s draining of the degreaser’s water separator.³⁰ As explained by Mr. Robertson, when TCE

³⁰During its cross-examination of Mr. Robertson, Raytheon showed the witness Exhibit 262 and, more specifically, the vapor degreaser diagram within that exhibit. As

condenses in the cold zone in the upper part of a degreaser, water from the humidity in the air also condenses and accumulates in the TCE reservoir. That water is deleterious to the vapor degreaser and, accordingly, is removed or drained off and disposed of through a water separator that, in turn, is typically drained to a storm drain. The water that is removed through the water separator, however, is laden with TCE. Mr. Robertson testified that, in all likelihood, Beech—consistent with standard practice in the 1950s—would have discharged the Hangar 4 degreaser’s water separator to the nearest storm drain within the floor drain system that, in turn, connected to a larger sump that drained through the pipeline to the drainage ditch. Indeed, it is undisputed that the pipeline that drains the floor drains of Hangar 4 terminates at the drainage ditch.

The court finds that this mechanism of release with respect to the hot spot to the southeast of Hangar 4 at the drainage ditch is entirely plausible. While Raytheon suggests that the release at the drainage ditch is explained by the Army’s use of TCE at a wash rack at that location during World War II, the court simply is not persuaded that the Army used TCE at HAAF in any respect during World War II. Both Mr. Mesard and Mr. Lewis questioned whether a release occurred through the pipeline but, on balance, the court is not persuaded by the testimony of these individuals on this issue. Msrs. Mesard and Lewis both testified that, in essence, they

noted by Raytheon and confirmed by Mr. Robertson, that diagram does not depict a water separator. As Mr. Robertson pointed out, however, the diagram in Exhibit 262 is a “conceptual” one and does not purport to depict each component part or mechanism of a vapor degreaser. In any event, the court is persuaded, based on Mr. Robertson’s testimony, that the vapor degreasers operated by Beech would have had water separators and that those water separators would have had to have been drained.

would fully expect the sewer line to leak and the absence of significant TCE contamination in the soil along the sewer line suggests that the sewer line was not leaking TCE and, thus, not carrying TCE.

On cross-examination, Mr. Mesard stated that he would be "shocked" if a 60-year-old vitrified clay pipe did not leak, but readily admitted that the pipe was not 60 years old during Beech's operations and, in fact, was only 7 or 8 years old at that time. When pressed, Mr. Mesard was unable to quantify in any respect the amount of leakage one would expect from a 7- or 8-year-old vitrified clay pipe and acknowledged that it was possible that the pipe utilized rubber gaskets which reduce leakage. In essence, Mr. Mesard conceded that there is simply not enough information available concerning the construction of the pipeline to determine the amount of leakage from that pipe. In addition, as evidenced from Mr. Mesard's cross-examination, the exact configuration of the sewer line underneath Hangar 4 is unknown. It is possible, then, that TCE is present in soils along the sewer line which simply were not sampled. It is also possible that certain samples taken from soils underneath Hangar 4 that reflect TCE concentrations were, in fact, samples from soils located near the sewer line.

Thus, while Messrs. Mesard and Lewis certainly raise an interesting issue concerning leakage from the sewer line, Raytheon has not persuaded the court that the sewer line in fact must have leaked and, to the extent it is assumed that some leakage occurred, Raytheon has not persuaded the court that TCE was not present in soils along the sewer line. Ultimately, then, the court is persuaded that Beech released TCE to the environment at the drainage ditch to the southeast of Hangar 4 through the sewer line connected to the floor drains of Hangar 4. Indeed,

even Mr. Lewis agreed that it was not a coincidence that the largest release at Hangar 4 occurred at the end of a pipeline that drained a hangar that housed a large TCE degreaser.

3. Northwest Corner of Hangar 1

With respect to the release or hot spot to the north of Hangar 1 and directly east of the finger building at the northwest corner of Hangar 1, Mr. Robertson explained that a release of TCE could have occurred in any number of ways, including the storage of TCE, the handling and transfer of clean TCE from a local storage area to the degreaser, the handling and transfer of TCE waste to a temporary storage location and the draining of the Hangar 1 degreaser's water separator.³¹ According to Mr. Robertson, the most likely mechanisms of release at Hangar 1 are discharges of TCE (in any number of forms, including sludge and/or drainage of the water separator) to the grate of the French drain on the east side of the finger building or Hangar 1 annex and the temporary storage of clean TCE or TCE waste in drums or other containers on the east side of the finger building.

Raytheon contends that the release to the north of Hangar 1 is more likely than not a result of a variety of Army processes occurring in the areas immediately surrounding the Hangar 1 hot spot, including use of TCE in the finger building, the spark plug building and the Hangar 1 subdepot. As explained above, the court rejects this argument and is simply not persuaded that

³¹Leaks and spills of TCE associated with the manual cleaning of the degreaser is less likely a cause of the release at Hangar 1 because the location of the degreaser is not within the Hangar 1 hot spot.

the Army used TCE at HAAF in any respect. Raytheon also challenges Mr. Robertson's testimony concerning the likelihood of a release at the French drain. As Mr. Lewis explained, any release of TCE to the drain would have flowed through the concrete trough of the drain and discharged at the end of the trough. Because no hot spot or source area is located at the end of the trough (but rather, is at the site of the drain itself), Mr. Lewis opines that the French drain is an unlikely mechanism of release. While Mr. Lewis's testimony certainly makes sense if the only form of TCE release to the drain was the discharge of the water separator (a discharge that would flow through the trough), it does not account for other forms of TCE release, particularly TCE waste that, as several witnesses explained, is a viscous substance. Mr. Lewis's testimony also does not account for spills or sloppy disposal practices in connection with use of the drain, regardless of the form of TCE, that might have caused TCE to release to the environment near the drain rather than flow into the drain and trough.

For all the foregoing reasons, the court is persuaded that Beech released TCE to the environment during its operations at the Site.

Conclusions of Law

I. Raytheon's Claims

To prove its section 107(a) cost recovery and section 113(f) contribution claims against the United States, Raytheon must demonstrate, among other things, that the United States owned or operated the Site at the time that TCE was released to the environment at the Site. *See* 42 U.S.C. § 9607(a)(2) ("any person who at the time of disposal of any hazardous substance owned

or operated any facility at which such hazardous substances were disposed of” shall be liable for response costs); § 9613(f)(1) (a party may seek contribution “from any other person who is liable or potentially liable under section 9607(a) of this title”).

As explained above, the court is not persuaded that the Army used (much less released) TCE during its operations at the Site. Because Raytheon has not established that the Army owned or operated the Site at the time that TCE was released to the environment, the United States is not liable for response costs and the court enters judgment in favor of the United States on Raytheon’s claims.³²

II. The United States’ Claim

To prove its section 107(a) cost recovery claim against Raytheon, the United States must demonstrate, among other things, that Beech owned or operated the Site at the time that TCE was released to the environment at the Site. *See* 42 U.S.C. § 9607(a)(2) (“any person who at the time of disposal of any hazardous substance owned or operated any facility at which such

³²At trial, the court retained under advisement two objections and one motion concerning the testimony of experts on issues bearing on the calculation of any judgment in Raytheon’s favor and the issue of equitable allocation in the event the court found both the United States and Raytheon liable for contamination at the Site. Specifically, the court retained under advisement Raytheon’s objection based on Federal Rule of Evidence 408 to the testimony of Gerald Harris concerning Raytheon’s allocation of insurance settlement proceeds to the Herington site; Raytheon’s sealed motion to bar the use of insurance settlement information (doc. 572); and Raytheon’s objection based on lack of foundation to the testimony of Mr. Robertson concerning his methodology for calculating the relative responsibility of the United States for TCE contamination. Because Raytheon has not proved its claims against the United States, these objections and the motion are moot.

hazardous substances were disposed of" shall be liable for response costs); § 9613(f)(1) (a party may seek contribution "from any other person who is liable or potentially liable under section 9607(a) of this title"). The parties have stipulated that Raytheon has assumed the environmental liabilities of Beech. As explained above, the court is persuaded that Beech released TCE to the environment during its operations at the Site.

The remaining elements of the United States' claim are not disputed by the parties. It is undisputed that the Site is a "facility" for purposes of section 107(a), that TCE is a hazardous substance for purposes of that section, and that a release of TCE occurred at the Site. Moreover, Raytheon has stipulated that the United States has incurred necessary response costs not inconsistent with the National Contingency Plan (NCP). *See Young v. United States*, 394 F.3d 858, 862 (10th Cir. 2005); 42 U.S.C. § 9607(a)(4)(A). Thus, the court enters judgment in favor of the United States on its claim.

The only remaining issue, then, is the amount of the judgment, both in terms of the amount of costs recoverable by the United States and the calculation of interest on that amount. As noted, Raytheon does not dispute that the United States has incurred some necessary response costs and does not dispute that the vast majority of those costs are not inconsistent with the NCP. Indeed, in light of the stipulations made by the parties, only a handful of discrete issues remain for the court's resolution concerning the United States' response costs—whether the United States may recover costs incurred in attempting to list the Site on the National Priorities List (NPL) when that task was ultimately never accomplished and whether the United States may recover costs incurred by ATSDR to perform the public health assessment when that health assessment

was not completed within the one-year statutory deadline; the recovery of ATSDR “indirect” costs is not authorized by CERCLA; and EPA did not use ATSDR’s public health assessment in selecting any response activities at the Site. Finally, the parties dispute the proper calculation of interest on the amount of recoverable costs.

A. Costs Incurred Attempting to List Site on NPL

Raytheon contends that the United States cannot recover its costs incurred in attempting to list the Site on the NPL (primarily, the costs incurred in conducting the ESI) because the Site was never listed on the NPL. The NPL is the list of hazardous waste sites eligible for long-term remedial action financed under the federal Superfund program. *New Mexico v. General Elec. Co.*, 467 F.3d 1223, 1227 n.4 (10th Cir. 2006). In support of its argument, Raytheon directs the court to one case—an unpublished district court decision from the Western District of Washington that Raytheon has not submitted to the court and the court has not been able to locate in its own research. In any event, the court rejects Raytheon’s argument.

The starting point is section 107(a)(4)(A), which permits the United States to recover “all costs of removal or remedial action incurred . . . not inconsistent with the national contingency plan.” 42 U.S.C. § 9607(a)(4)(A). A site investigation is clearly a “remedial action” within the meaning of section 107(a)(4)(A). *See County Line Inv. Co. v. Tinney*, 933 F.2d 1508, 1512 n.6 (10th Cir. 1991) (“A ‘remedial action’ under CERCLA ‘includes investigations ‘consistent with a permanent remedy’ for a site.’”) (quoting 42 U.S.C. § 9601(24)). Moreover, the NCP, a set of regulations promulgated by EPA that establishes procedures and standards for responding to

releases of hazardous substances, *see Tinney*, 933 at 1511 (citing 42 U.S.C. § 9605), contemplates that site investigations and inspections may be conducted as appropriate regardless of whether the site is included on the NPL and expressly states that inclusion on the NPL is not a precondition to the recovery of costs under section 107(a). *See* 40 C.F.R. §§ 300.415(b)(1), 300.420(c) & 300.425(b)(4). The costs of a site investigation, then, regardless of whether that investigation was conducted to determine eligibility for listing on the NPL, are recoverable costs under section 107(a)(4)(A). *See United States v. Hardage*, 982 F.2d 1436, 1441-42 (10th Cir. 1992) (emphasizing that the government is entitled to recover “all” costs of removal or remedial response actions incurred not inconsistent with the NCP and that consistency with the NCP is presumed unless the defendant can overcome the presumption by presenting evidence of inconsistency); *see also State of New York v. Shore Realty Corp.*, 759 F.2d 1032, 1046-47 (2d Cir. 1985) (listing on the NPL is not a prerequisite to the recovery of costs and NPL listing is not a requirement under the NCP); *Westwood Pharmaceuticals, Inc. v. National Fuel Gas Dist. Corp.*, 737 F. Supp. 1272, 1286 (W.D.N.Y. 1990) (granting summary judgment in favor of plaintiff on defendant’s affirmative defense that recovery of costs was precluded because the site was not listed on the NPL).

B. ATSDR Costs

Raytheon sets forth three independent arguments concerning the recoverability of costs incurred by ATSDR in performing the public health assessment at the Site: that those costs are not recoverable because the health assessment was not completed within the one-year statutory

deadline; that ATSDR's "indirect" costs are not recoverable because such recovery is not authorized by CERCLA; and that the costs are not recoverable because the public health assessment did not fulfill its statutory purpose in that EPA did not use ATSDR's public health assessment in selecting any response activities at the Site. As will be explained, the court concludes that the health assessment was not completed within the statutorily prescribed period of time and, in the absence of any argument from the United States that the costs of the health assessment are recoverable even if the public health assessment was untimely completed, the court concludes that the United States cannot recover such costs. The court, then, declines to address Raytheon's remaining arguments concerning ATSDR's costs.

CERCLA requires ATSDR to perform a health assessment within one year of an EPA proposal to list a site on the NPL. 42 U.S.C. § 9604(i)(6)(A). It is undisputed that EPA proposed the Site to the NPL in July 2001 and that ATSDR completed the health assessment for the Site in November 2002—more than one year after EPA's proposal. The United States contends that Raytheon's argument concerning the statutory deadline is without merit because that deadline has consistently been waived by Congress in language inserted in ATSDR's annual appropriations. The court disagrees. The relevant language that the United States relies on to support its waiver argument is found in Public Law 106-377, 114 Stat. 1441, 1441A-40 (2000) and states, in pertinent part:

[N]otwithstanding any other provision of law, in lieu of performing a health assessment under section 104(i)(6) of CERCLA, the Administrator of ATSDR may conduct other appropriate health studies, evaluations, or activities, including, without limitation, biomedical testing, clinical evaluations, medical monitoring, and referral to accredited health care providers: *Provided further*, That in

performing any such health assessment or health study, evaluation or activity, the Administrator of ATSDR shall not be bound by the deadlines in section 104(i)(6)(A) of CERCLA.

According to Raytheon, the language of the appropriations bill reflects that Congress has only waived the one-year deadline with respect to “such” studies, evaluations or activities conducted in lieu of the health assessment under 104(i)(6) and not for the health assessment itself.³³ The United States, on the other hand, contends that the use of the phrase “health assessment” in the “provided further” paragraph clearly relates back to the section 104(i)(6) health assessment discussed in the initial paragraph such that the one-year deadline is waived for the both a statutory health assessment as well as any study, evaluation or activity performed in lieu of that health assessment.

While the court believes that the bill’s use of the word “such” in the “provided further” paragraph does reflect an intent to limit the deadline waiver to those studies, evaluations or activities performed in lieu of a health assessment, the court acknowledges that the bill’s use of the phrase “health assessment” could conceivably be construed to encompass the statutory health assessment discussed in the paragraph preceding the “provided further” paragraph. Because a potential ambiguity exists, then, the court looks to the pertinent legislative history, which fully supports Raytheon’s and the court’s construction of the appropriations bill language. *See* H.R. Rep. No. 106-988, at 119 (2000) , *reprinted in* 2000 U.S.C.C.A.N. 1217, 1275. Specifically,

³³There is no dispute in this case that the public health assessment conducted by ATSDR purports to be a public health assessment under section 107(a)(4)(D) rather than a study, evaluation or activity performed in lieu thereof.

the language of the conference report states:

The conferees have also included bill language which permits the Administrator of the ATSDR to conduct other appropriate health studies and evaluations or activities in lieu of health assessments pursuant to section 104(i)(6) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA). The language further stipulates that in the conduct of such *other* health assessments, evaluations, or activities, the ATSDR shall not be bound by the deadlines imposed in section 104(i)(6)(A) of CERCLA.

Id. (emphasis added). The conference report's use of the word "other" in describing those health assessments, evaluations or activities which are not bound by the statutory deadlines of section 104(i)(6)(A) clearly reflects an intent to waive the deadline only with respect to those health studies, evaluations or activities other than a health assessment performed under section 104(i)(6). The United States, despite the opportunity to do so in its reply memorandum on the recoverability of certain costs, has not addressed the language of the conference report. Thus, the court concludes that Congress has not waived the one-year deadline with respect to section 104(i)(6)(A) public health assessments. *See United States v. W.R. Grace & Co.-Conn.*, 280 F. Supp. 2d 1149, 1177 (D. Mont. 2003) (noting, without reference to any waiver, that CERCLA requires completion of the health assessment within one year of NPL proposal).

The United States does not contend that the costs of a public health assessment are recoverable even if the health assessment is completed after the statutory deadline. Rather, the United States argues only that the one-year deadline has been waived such that it is inapplicable. There may be a sound basis for the United States' failure to make the argument that the costs are recoverable even if the health assessment is completed beyond the one-year deadline. Indeed, the language of section 107(a)(4)(D) provides that a liable party shall be liable for "the costs of

any health assessment or health effects study carried out under section 9604(i) of this title.” Arguably, a health assessment that does not comport with the statutory requirements of section 9604(i), including the one-year deadline, has not been “carried out” under that section. Moreover, because the primary purpose of the health assessment is to evaluate the risk of human exposure to hazardous substances and to determine whether steps such as the provision of alternative water supplies or the relocation of individuals need to be taken, *see* 42 U.S.C. § 9604(i)(6)(G), it is reasonable that Congress provided the one-year deadline to ensure that these steps be taken quickly and, if they are not, then it may be that they are not truly “costs of removal or remedial action.” In short, because the United States does not contend that the costs of a health assessment completed beyond the one-year deadline are recoverable in any event, the court concludes that the United States may not recover these costs.

C. Prejudgment Interest

The final dispute among the parties is the United States’ calculation of prejudgment interest. Section 107(a) provides that the “amounts recoverable in an action under this section shall include interest on the amounts recoverable” and that such interest shall accrue from “the date payment of a specified amount is demanded in writing.” 42 U.S.C. § 9607(a). It is undisputed that the United States, on August 8, 2000, made a written demand for payment of response costs totaling in excess of \$1 million. The United States’ calculation of prejudgment interest, then, accrues from this date for costs incurred prior to August 8, 2000 and, for costs incurred subsequent to that date, the United States’ calculation of prejudgment interest accrues

from the date on which those subsequent costs were incurred.

According to Raytheon, it is inappropriate to calculate prejudgment interest from August 8, 2000 because the United States, on May 7, 2001, made a revised demand for payment seeking approximately \$16,000 less than it initially demanded in August 2000 (conceding that its initial demand erroneously included certain costs but nonetheless seeking in excess of \$1 million consistent with the initial demand). Raytheon, then, contends that any calculation of prejudgment interest should accrue from the date that the United States made its revised demand and that subsequent revised demands should accrue interest from the date of the revised demands. The court concludes that the United States' use of the date it made its initial demand for payment in excess of \$1 million is correct and supported by applicable case law.

Notably, in *Bancamerica Commercial Corp. v. Mosher Steel of Kansas, Inc.*, 100 F.3d 792, 801 (10th Cir. 1996), the Tenth Circuit held that a plaintiff's Third Amended Complaint alleging that it had incurred "in excess of \$1 million" in response costs for which it was seeking reimbursement satisfied section 107(a)'s requirement of a written demand for a specific dollar amount. In so holding, the Circuit cited with approval the Fifth Circuit's decision in *In re Bell Petroleum Servs., Inc.*, 3 F.3d 889, 908 (5th Cir. 1993), in which the Fifth Circuit also held that a federal court complaint seeking response costs satisfied the written demand requirement even though the complaint did not specify an exact amount. These cases make clear, then, that a written demand need not set forth an exact dollar amount and the cases inherently recognize that whether the amount sought is subject to fluctuation does not bear on whether an initial demand for payment has been made. The United States, then, is correct to calculate prejudgment interest

on costs incurred prior to August 8, 2000 from August 8, 2000, the date on which it made its initial demand for payment in excess of \$1 million.

That having been said, the court is unable to calculate the amount of prejudgment interest in this case as the United States has not submitted its specific calculations of interest but only its overall calculation of costs, including interest. In other words, the calculation submitted by the United States does not differentiate the principal amount sought from the amount of interest calculated on that principal amount. Because the court has determined that the United States is not entitled to recover costs incurred by ATSDR, the court cannot adopt the calculation of the United States and the United States must recalculate its total costs and, in doing so, should calculate prejudgment interest consistent with this order.

IT IS THEREFORE ORDERED BY THE COURT THAT judgment be entered in favor of the United States on Raytheon's claims for cost recovery and contribution.

IT IS FURTHER ORDERED BY THE COURT THAT judgment be entered in favor of the United States on the United States' claim against Raytheon for cost recovery. With respect to the amount of that judgment, the United States, **no later than June 9, 2008**, shall resubmit its calculation of the amount of costs incurred (deleting any ATSDR costs) with interest calculated on that amount consistent with this order. If Raytheon desires to challenge that calculation (on a basis that neither could have been raised earlier nor was raised earlier), it should file an objection **within 10 days** of the date of the United States' submission.

IT IS FURTHER ORDERED BY THE COURT THAT Raytheon's sealed motion to bar the use of insurance settlement information (doc. 572) and Raytheon's motion to submit its unredacted attorneys' fee entries for in camera review (doc. 582) are moot.

IT IS SO ORDERED.

Dated this 30th day of May, 2008, at Kansas City, Kansas.

s/ John W. Lungstrum
John W. Lungstrum
United States District Judge