AFFIDAVIT OF MARVIN RESNIKOFF

COUNTY OF WINDHAM §
STATE OF VERMONT §

BEFORE ME, the undersigned Notary, personally and came and appeared

MARVIN RESNIKOFF

Who, after being duly sworn on his oath, stated that he has read the following Affidavit, and it is true and correct, and that every statement contained herein is within his personal knowledge.

1. My name is Marvin Resnikoff. I am over the age of 21 and am competent to testify to the following based on my personal knowledge.

2. I am currently employed as a Senior Associate at Radioactive Waste Management Associates. I am the Principal Manager at Associates and Project Director for dose reconstruction and risk assessment studies of radioactive waste facilities and transportation of radioactive materials.

3. I have over 30 years experience on radioactive waste issues.

4. I am a 1965 graduate of the University of Michigan with a Doctor of Philosophy in Theoretical Physics, specializing in group theory and particle physics. I am a member of the American Public Health Association and the Health Physics Society.

5. In 1973, I was a Fulbright lecturer in particle physics at the Universidad de Chile in Santiago, Chile. From 1967 to 1973, I was an Assistant Professor of Physics at the State University of New York at Buffalo.

6. I have authored or coauthored five books on radioactive waste issues, including a book on low-level radioactive waste landfills, *Living Without Landfills*, and a November 2008 report on West Valley, *The Real Costs of Cleaning Up Nuclear Waste: A Full Cost Accounting of Cleanup Options for the West Valley Nuclear Waste Site*. Synapse-Energy was the prime author of the report.

7. I conducted studies on the remediation and closure of the leaking Maxey Flats, Kentucky radioactive landfill for Maxey Flats Concerned Citizens, Inc. and on the leaking uranium basin on the NMI/Starmet site in Concord, Massachusetts under grants from the Environmental Protection Agency. I also conducted studies of the Wayne and Maywood, New Jersey thorium Superfund sites and proposed low-level radioactive waste facilities at Martinsville (Illinois), Boyd County (Nebraska), Wake County (North Carolina), Ward Valley (California) and Hudspeth County (Texas).

8. I also served as an expert witness for CRPE, a public interest groups, regarding the proposed expansion of the Buttonwillow, California NORM landfill. I am presently working for Earthjustice re. the licensing of an irradiation facility near the Honolulu airport in Hawaii.

9. In Canada, I conducted a study for Concerned Citizens of Manitoba regarding transportation of irradiated fuel to a Canadian high-level waste repository. I am presently working for Greenpeace reviewing the environmental assessment for a proposed intermediate level waste repository under Lake Huron, and for the Provincial Womens Council of Ontario on radioactive waste management costs in a proceeding before the Ontario Energy Board.

10. Also in Canada, I conducted studies on behalf of the Coalition of Environmental Groups and Northwatch for hearings before the Ontario Environmental Assessment Board on issues involving radioactive waste in the nuclear fuel cycle, which involved a study of landfills at West Valley (NY), Maxey Flats (KY) and Sheffield (IL).

11. In February 1976, assisted by four engineering students at State University of New York at Buffalo, I authored a paper that, according to Science, changed the direction of power reactor decommissioning in the United States. His paper showed that power reactors could not be entombed for long enough periods to allow the radioactivity to decay to safe enough levels for unrestricted release. The presence of long-lived radionuclides meant that large volumes of decommissioning waste would still have to go to low-level or high-level waste disposal facilities.

12. In June 2000, I was appointed to a Blue Ribbon Panel on Alternatives to Incineration by DOE Secretary Bill Richardson. A more detailed resume is attached as Appendix A.

13. To prepare this affidavit, I and my staff reviewed the license application by Waste Control Specialists (WCS), the Environmental Assessment by TCEQ and additional references listed below. This review should be considered preliminary due to the short time period we have had to conduct this review.

Summary of Findings

14. Based on our preliminary review, I find that

   a. the geology and hydrogeology of the site is not well defined. It appears that groundwater under the site may discharge in springs to the west of site in New Mexico, and the site could be inundated by surface water in a hundred year rainfall. Granting a license before these basic issues are resolved would be irresponsible.

   b. the inventory does not account for all the commercial waste that may be accepted by the proposed facility. WCS appears to be planning for a much larger inventory. And,

c. the proposed decommissioning fund is inadequate, and placed in financial instruments that are not secure. I recommend instead that real dollars be placed yearly in an external fund administered by the State.

SITE GEOLOGY AND HYDROLOGY

Groundwater

15. WCS has not provided a complete environmental assessment of the groundwater dynamics in the areas below the proposed LLRW site in Andrews County, TX. Until this is done, WCS should not be granted a license by TCEQ. Despite the fact that this site has been under consideration since the late 1980s, a rigorous hydrology assessment accepted by a consensus of geologists has not been completed. In 1987 it was determined that the Andrews County site was not appropriate for in-ground LLRW disposal due to the presence of the Ogallala aquifer (Lawrence, 1987). Literature on the regional hydrology has stated that the presence of water in the Ogallala formation exists throughout the county. Given that movement of water surficially and underground is toward areas with karstic features, contamination could result in widespread impacts. Water for the Town of Andrews comes from 19 wells north and northeast of the city. Irrigation in the County is critical for irrigation farming. Protection of groundwater is critical for the sustained future of this region.

16. It is my understanding that Pat Bobeck, a former TCEQ staff geologist, left the agency because of his objections to the WCS licensing as he maintained that WCS has continued to fail to adequately characterize the site. Ms. Bobeck stated the following: "The application contained inconsistencies and contradictions and a lack of detailed geologic data. There is water there in that clay and in the siltstone and water is going to move that waste around. It's going to cause problems and there's no way around that." (Sierra Club, 2008) This is a matter that should be thoroughly investigated.

17. The watershed divide is unknown because of the red bed ridge which is thought to function as a regional groundwater divide separating the Ogallala aquifer to the northeast and the Pecos River aquifer to the southwest. The red bed ridge is a crest of Triassic red bed deposits below the OAG formation. The caliche caprock primarily covers the red bed ridge. According to one geologist the location of the site on the red bed ridge with structural depressions surrounding it demonstrates that contaminated water could flow in either direction from the site. It could flow northeastward towards the Antlers or Ogallala formations, towards the karstic aquifer of the Edwards plateau, or it could flow southwest into Monument Draw towards the karstic aquifers of the Pecos River Valley.

18. Radionuclides at other dry landfill sites have reached aquifers deep beneath the surface. At the Beatty, Nevada landfill tritium reached the aquifer 357 feet below

the surface and traveled off-site within 35 years. Some water was buried with the radioactive waste (700,000 gallons), but the majority infiltrated the site via precipitation. This occurred despite the fact that the site only receives 6 inches of precipitation annually, far less than the proposed WCS site. US Geological Survey scientists had run models on the Beatty site and predicted that contamination would not occur. One former USGS scientist hypothesized that this was able to occur due to flow through "preferential pathways" within the unsaturated layer which accelerated the rate of flow in those pathways.

19. Andrews County, Texas, resides above the Ogallala aquifer. The Ogallala aquifer is a shallow underground water table aquifer that covers approximately 174,200 square miles in portions of eight states in the United States, including Texas and New Mexico. The Ogallala aquifer provides drinking water to 82% of the people who live within the boundary of the aquifer. WCS has failed to provide a precise estimate of the groundwater table depth in the Ogallala aquifer below the LLRW proposed waste site. Two water tables are present at the proposed site and are discussed below.

OAG Water Table

20. The shallowest water table present within the "OAG" materials is above the proposed FWF and CWF units. The "OAG" materials contain the formations of the Ogallala, Antlers, and Gatuna. According to TCEQ, the precise current lateral extension of this water table is unknown due to the uncertainty of the dry line (TCEQ, 2008a). WCS has consistently stated to the public that the Ogallala aquifer is not present at the proposed site, thus there are differing professional opinions (WCS, 2005) on this issue.

21. In their EA TCEQ notes that the OAG dry line "appears to have moved several thousands of feet toward the proposed disposal units" in the WCS's latest application when compared to previous applications. Several wells in the OAG which were previously dry have now been found to contain several feet of water, thus indicating that the dry line has likely moved much closer to the proposed facilities. Given that the dry line of the OAG is dependent on precipitation and recharge, this implies that as precipitation increases with climate change the dry line of the OAG will move into the disposal areas, as was observed in modeling of the future. This information also indicates that only a few years of data can result in large changes in the dry line's location, which is extremely important for issuance of this license. (TCEQ, 2008a)

22. In the EA TCEQ further notes that interpretation of where the OAG dry line occurs may vary, and that their own analysis would find it even closer to the proposed facilities. TCEQ recommended that the FWF be relocated 50 feet further from where the OAG dry line is thought to be. TCEQ says that a buffer zone of 100 feet around the CWF and FWF is sufficient as detection of saturated conditions in the buffer zone would mean that burial would be stopped. (TCEQ, 2008a) I note that CWS has purchased a large buffer zone, extending into New

Mexico. This is a matter that should be explored with State officials in New Mexico.

23. Baker Spring is 2,000 feet west-northwest of the site in Lea County, New Mexico and frequently contains water. Baker Spring is located behind the OAG dry line and is cut into the Dockum red bed clay, and thus Baker Spring would receive groundwater from the saturated OAG zone. An unnamed surface water body exists 0.25 miles southeast of Baker Spring, between the proposed facilities and the spring. (TCEQ, 2008a). It appears that Baker Spring resides within the WCS' property line of WCS in New Mexico and is one of the monitoring points for potential leakage from the facility.

24. From my preliminary review of the CWF, it appears that the trenches will be lined with shotcrete (but not a geomembrane layer) and the depth will put the bottom of the trenches in close proximity to the top water table. My greatest concern involves the monitoring for leakage. Each burial trench appears to drain into a common drain and does not appear to to be individually monitored. If leakage is detected at Baker Springs, or at the perimeter of the facility, it is not clear how CWS will determine which trench is leaking and which trench should be exhumed.

Dockum Water Table

25. The water table within the upper reaches of the Dockum Group, lying below the OAG Group, has continuous lateral extension under and throughout the proposed site with variable depths beneath the OAG materials. The WCS application states that this water table is no closer than 14 feet from the bottom of the deeper proposed FWF, although the reasoning for this determination is not clearly provided. TCEQ notes that the discussion of the deeper water table is not clear in the application and that the assumption of a steady-state system in the Dockum red bed for the period of analysis is not explained. (TCEQ, 2008a) I agree.

26. The TCEQ further states that "groundwater dynamics in the subsurface of the proposed disposal site are complex and cannot be deduced from simple arguments or representations." TCEQ interprets this to mean that groundwater in the Dockum red med materials appears to be moving laterally towards the proposed facilities and upward, thus suggesting that the lower water table will continue to move upward until the vertical gradient in the hydraulic head is diminished. In addition, increased rainfall could increase the hydraulic head in the Dockum red bed materials increasing the movement of groundwater upward. Thus the water table will eventually intersect the proposed disposal areas. (TCEQ, 2008a)

27. Faults and fractures occur along the crest and parallel to the Dockum red bed ridge. The TCEQ and the Bureau of Economic Geology of the University of Texas agree that the faults and fractures in the area do not appear to be active. This is not to say that these fractures and faults will not become active at some point in the future, which must be considered given the longevity of the

radioactivity in the LLRW to be buried on the site. A reverse fault existed in one of the walls of the adjacent RCRA unit, which was excavated and removed. (TCEQ, 2008a)

28. TCEQ recommended additional license conditions for additional characterization of the subsurface area during construction activities. While additional characterization should be completed, it should be completed prior to the onset of construction activities and issuance of a license. Once the company has invested a large sum to develop the site, it is unlikely that the license would be rescinded if serious negative information were uncovered.

Karst

29. Karst features have been documented in a trench excavated across a lineament at the site and in the area of Baker Spring (north of the proposed facilities). These features in the caliche include vugs, solution-enlarged fractures, solution cavities, and pipes. The National Research Council has determined that there are issues which would make soil clean-up and remediation in the area difficult due to the following: (TCEQ, 2008a)

    a. physical heterogeneity, making groundwater migration pathways difficult to predict
    b. migration of contaminants to inaccessible areas, such as clays or small pores in aggregates
    c. sorption of contaminants to subsurface materials
    d. difficulties in characterizing the subsurface
    e. presence of non-aqueous phase liquids, creating long-term continuous sources in the subsurface

Mineral rights

30. WCS does not own all of the mineral rights below the proposed land disposal facility. The WCS is requesting that the TCEQ request that the attorney general institute condemnation proceedings to acquire fee simple interest in the outstanding mineral rights. There are approximately 8 separate individuals/entities that own mineral rights to the proposed facility. Drilling on WCS land poses the problem that aquifers may be mixed and that contaminated waters may be brought to the surface.

Surface Waters

31. **Playa Cannot Contain All Runoff From Drainage Area 2.** The WCS LLRW disposal facility contains a draw that flows in the southern portion of the facility. The contributing watershed of this draw was modeled and divided into six separate drainage areas. The purpose of modeling the watershed was to determine whether runoff from Drainage Area 2 will be contained within the playa located in Drainage Area 2 or if overflow from the playa in Drainage Area 2 will

contribute runoff to the draw. Drainage Area 2, the largest drainage area of the watershed, contains 680.53 acres of land and is located off the northeast corner of the WCS disposal site. WCS License Application Volume 7 Section 5.0 states that under a 100-year and 500-year storm event, the playa would contain all runoff from Drainage Area 2 and that there would be no flow of runoff from the playa to the draw (WCS, 2007)[1].

32. Topographic maps demonstrating surface elevation within Drainage Area 2 suggest that the playa is not a depression that could completely contain all of the runoff from Drainage Area 2. Mapped contour lines show that the southwest side of the playa, the side that faces the WCS disposal site, slopes downward in elevation. Therefore, the playa cannot contain all runoff from Drainage Area 2 because water always flows down gradient.

33. Again, as seen in Figure EA-9 (a three-dimensional visualization of the WCS LLRW waste facility and the surrounding areas) of the Draft Environmental Analysis of the WCS Application for Radioactive Material License (TCEQ, 2008), the playa cannot possibly contain all runoff from Drainage Area 2 (TCEQ, 2008). There is a visual depression in the southwest side of the playa, which would cause runoff to flow from Drainage Area 2 towards Drainage Area 4, the drainage area directly down gradient of the playa in Drainage Area 2. Drainage Area 4 contains the WCS disposal facility.

34. Based on estimates drawn from Figure EA-9 of the Draft Environmental Analysis of the WCS Application for Radioactive Material License (TCEQ, 2008), the change in elevation between the bottom of the WCS Federal Waste Facility and the top of the playa is (3450 ft – 3350 ft) 100 ft, and the change in distance from the bottom of the WCS Federal Waste Facility to the playa is (6,000 ft – 3,360 ft) 2,640 ft. Therefore, a moderately steep slope grade of about 3.8% does exist between the playa and the WCS disposal site.

35. Since runoff will be flowing down gradient from the playa towards the WCS disposal site, a greater volume of runoff than what was originally accounted for by WCS will be affecting the facility. WCS states in Volume 7 Section 5.0 of its License Application that the flood plain of a 100-year and 500-year storm event is shallow and wide, with maximum depths of flow throughout the facility ranging from 0.5 to less than 2 feet for a 100-year storm and 0.75 to 2.25 feet for the 500-year storm. Since Discharge Area 2 is the largest discharge area of the watershed, it has the potential to contribute the greatest amount of runoff to the facility. The addition of runoff from Discharge Area 2 could greatly increase the maximum depths of flow within the flood plain due to a 100-year or 500-year storm event, as well as lead to other adverse effects such as increases in soil erosion, the formation of standing pools, and flooding in Drainage Area 4 that contains the WCS disposal facility. The addition of runoff from Drainage Area 2 to the WCS

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[1] Drainage Area 2 and the playa/depression can be seen in Figures II.F.1 and II.F.2 of WCS License Application Volume 7.

disposal site would increase the total volume of water infiltrating the disposal site, therefore increasing the likelihood of groundwater reaching buried LLRW and becoming contaminated. Since WCS did not account for the large contribution of runoff from Drainage Area 2 in its license application, the floodplain study located in Volume 7 of the WCS License Application is incomplete, appears to be incorrect and should not be accepted when reviewing the WCS LLRW License Application.

36. **Poor Hydrologic Conditions.** Figure II.F.2 of Volume 7 of the WSC License Application displays a line of varying hydrologic conditions within the permit boundaries of the WCS disposal facility. The hydrologic condition line runs just south of the WCS disposal site, and all areas north of the hydrologic condition line are considered to be of poor hydrologic condition. Poor hydrologic condition means that there is less than 50 percent vegetation cover in the area. Vegetation serves an ecosystem by stabilizing soil with its root structure. Large gaps and interspaces between vegetation greatly increase the chances of soil erosion, which in turn decreases the amount of water able to be infiltrated into the soil.

37. The area between the playa in Drainage Areas 2 and the WCS disposal site in Drainage Area 4 consist of Blakeney and Ratiff soils. Blakeney and Ratiff soils are classified as Type B soils, meaning that these soils have moderate infiltration rates when consistently wetted. Since the infiltration rates of these soils are not very high, the amount of rainfall contributed by an intense storm event such as a 100-year or 500-year storm would increase the volume of runoff flowing from the playa to the WCS disposal site. Low infiltration rates accompanied by poor hydrologic conditions would further increase the amount of runoff that flows from the playa to the WCS disposal site.

38. An increase in the volume of water contributed to the WCS disposal site will greatly increase the likeliness of groundwater contamination and contamination of the draw that flows through the WCS disposal facility. The increased flow of runoff from the playa will allow water to pool in the area of the WCS disposal site. Here, a much greater volume of water than originally accounted for by WCS will be able to infiltrate through the soils surrounding the WCS disposal site and possibly be contaminated by uncanistered LLRW. This contaminated groundwater would then recharge the draw flowing through the WCS disposal facility, which ultimately flows into the Colorado River.

SITE INVENTORY

39. The CWF will receive LLRW from states in the Texas Compact; this includes generators in Vermont and Texas. Waste generators in the Texas Compact are estimated to produce 2,800,000 cubic feet of LLRW over the projected 35-year operational life of the CWF (estimated activity of 4,700,000 Curies). This includes the decommissioning volume predictions for the Vermont Yankee reactor. Decommissioning of two reactors at the South Texas Project, and two reactors at Comanche Peak are not included. Reactor license extensions are not

included in the projection of waste volume coming to the CWF, although WCS expects the CWF to be available for those wastes. It is not clear that a waste volume of less than 100,000 cubic feet per year is an economically viable operation. It is more likely that CWS will be searching for additional customers, and appears to be planning for that eventuality. In the current plan the excavated volume of red bed for the CWF is approximately 20,000,000 cubic feet. While WCS claims that they only intend to dispose of 2,800,000 cubic feet of LLRW in the CWF, they are excavating 20,000,000 cubic feet. The WCS application states that the compact waste facility will accept stabilized LLRW Classes A, B, and C from commercial waste generators in Texas and Vermont. The application estimates that 90% of the volume of waste will be Class A, 9% will be Class B, and 1% will be Class C. (TCEQ, 2008a; WCS, 2008). Since the Barnwell and Richland facilities will be limited to waste from those compacts, and since the Utah facility will only accept class A waste, the WCS facility may have additional customers.

40. The total volume of commercial waste that was disposed of at all three operating commercial LLW disposal facilities in 2005 was 4,013,815 cubic feet (113,657 cubic meters). This volume amounted to 527,202 curies. The following table shows the breakdown of where all the waste went. It is not unreasonable to expect that uch of that waste will be coming to the proposed CWS facility.

2005 Volume and Activity by Disposal Facility

Disposal Facility	Volume (Cubic Feet)	Activity (Curies)
Clive	3,940,775	3,262
Barnwell	43,014	617,693
Richland	30,026	6,247
TOTAL	4,013,815	527,202

41. The FWF is proposed to include a volume of 57,000,000 cubic feet based on the DOE's 70-year waste projection, which is assumed to be disposed during a 35-year operational period, assuming an accelerated cleanup schedule of DOE facilities. The total activity is estimated to be 16,400,000 Curies. The waste volume and radioactivity projections are based on DOE projections from the DOE report "The Current and Planned Low-Level Waste Disposal Capacity Report", Revision 2. The FWF is projected to accept Class A, B, and C LLRW and mixed waste, a combination of wastes that are Class A, B, and C LLRW and hazardous waste. A current Texas statute limits the total volume at the FWF that is containerized to be 3,000,000 cubic yards for the first 5 years, and after 5 years that the lifetime capacity of the federal facility waste that is containerized may be increased by license amendment to a maximum of 6,000,000 cubic yards. Non-containerized waste will also be disposed of at the FWF area for waste that is soil-like or rubble material from construction demolition and environmental

restoration projects. (TCEQ, 2008a; WCS, 2008)

42. The bottom line is that the total inventory that may be accepted is 57 million cubic feet at the FWF plus 3million cubic feet/yr of commercial radioactive waste (if the CWF becomes a national repository) for 15 years, or 45 million cubic feet. By way of comparison, the Maxey Flats low-level radioactive waste landfill contains 6 million cubic feet of radioactive waste. That is, the CWF plus FWF could be almost 20 times larger than Maxey Flats.

FINANCIAL ASSURANCE

43. The financial assurance required by the TCEQ in the Radioactive Material License is $136,468,000 in 2008 dollars for the first year, with an increase of $3,350,000 in 2008 dollars accruing for each additional operational year, for 15 years. The basis for this financial information is confidential; as far as we aware, only the State has examined the company's numbers. The breakdown of the costs (in 2008 dollars) is estimated below:

Decommissioning and Closure - $79,912,000
Post-Operational Surveillance - $10,256,000
Institutional Control - $21,000,000
Corrective Action - $25,300,000
Annual Increase to Account for Cumulative Waste - $3,350,000

44. The TCEQ specifies that the amount above ($136 million plus $3.5 million for 15 years, or $186 million total) may be altered to reflect cost estimates for on-site discharge of leachate that include decommissioning costs of an on-site wastewater treatment facility, costs for disposal and treatment of residuals and contaminated treatment media, and costs incurred if an independent contractor is hired to operate and decommission the wastewater treatment facility.

45. The proposed financial assurance stated in the WCS application:

1st Year Closure - $98,800,000
2nd Year Closure - $103,400,000
Unplanned Closure - $115,500,000

The costs estimated by WCS are considerably less than those that TCEQ determined to be necessary. In addition, TCEQ's environmental assessment (EA) found several errors (including mistaking cubic yards for cubic feet) and underestimates in the financial assurance estimates in WCS's application. It is important that the costs be carefully and precisely analyzed. Since these estimates are confidential, the public has not been able to verify the numbers. If the funds are not sufficient, or are not in a form that can be accessed when needed, the State's taxpayers will have to make up the difference.

46. To finance these costs, WCS intends to provide a letter of credit. I feel strongly

that a letter of credit is not the proper instrument for financial assurance since a letter of credit depends on the credit worthiness of the bank, the company and the economy in general. The present financial condition of banks, corporations and the economy as a whole, should be a wake-up call. Instead, the State should require that actual dollars be deposited in an external fund managed by the State.

47. As of yet no LLRW storage facility has closed without vastly exceeding projected costs due to unforeseen problems. The disposal areas at West Valley have yet to be decommissioned, while the projected cost of decommissioning has continued to increase over time. The cost of closure and decommissioning is discussed below.

48. All three of the closed commercial LLRW disposal sites in the United States have experienced environmental problems with water leaking from burial areas. Each of the sites has required active maintenance and remedial activities within 10 years of their closure.

49. Maxey Flats operated from 1963 until 1977, with a total 6,000,000 cubic feet of LLRW buried there. Maxey Flats was closed following leakage from closed trenches. The stabilization of the Maxey Flats site was estimated to cost $60,000,000, while the clean up of 3,000,000 gallons of contaminated water and the installation of an interim cap were estimated to cost $45,000,000 (Environmental Quality Commission, 2002). That is, for 6 million cubic feet of waste, the estimated decommissioning cost is $105 million. In comparison, for approximately 20 times the waste volume at the CWS facility, the estimated decommissioning cost is $186 million. Maxey Flats became a Superfund site and following the clean-up, the final disposal costs for the wastes at Maxey Flats will be between 10-50 times greater than the fee that was charged for burial there . (Makhijani and Saleska, 1992). The Maxey Flats site will have to be monitored and maintained into perpetuity.

50. The full cost accounting for Alternative 1 (removal) from the EIS for the West Valley site was found to be $9.9 billion for closure of the entire site, including the state licensed disposal area (SDA) and the NRC licensed disposal area (NDA). In the event that Alternative 2 (in place closure) from the EIS is selected the cost for closure of the entire site, including the SDA and NDA would be between $13 and $27 billion, depending on whether a catastrophic release occurred. These costs are not simply the dollar costs to the State and Federal governments, but also the cost to the public.

Further the affiant sayeth not.

MARVIN RESNIKOFF, Ph.D

SWORN TO AND SUBSCRIBED

BEFORE ME THIS 12th day of January, 2009.

Delma Allwood

NOTARY PUBLIC, State of Vermont
My Commission expires: 3/2/09