The purpose of this model document is to assist California businesses, regulators and professional engineers/consulting engineers in preparing tank/tank system assessments that meet the requirements for tanks used to store, accumulate or treat hazardous waste[1]. The format presented in this model is not required by law, but provides a format by which all required information is referenced and included.

One problem commonly encountered by regulators during the review of prepared assessments is finding assessments which contain "conditions" that are applied to the assessment. Engineers shall not sign or stamp this assessment unless the tank/tank system is fully compliant with all referenced sections. This required to reduce the number of instances where engineers are providing truthful information and assessment of a tank system, but an assessment which does not demonstrate compliance with regulatory requirements. This situation commonly results in businesses expending additional time and money to remedy a situation they believe is in compliance.

The model includes multiple sections which, cumulatively, provide all required information. Each of the documents included in this model are included below:

Tank assessment:
For each tank, complete one "Tank Assessment Page".

Containment:
For exterior lined systems (bermed) complete "Secondary Containment Assessment Page A".
For vaulted systems complete "Secondary Containment Assessment Page B".
For Double Walled tanks, complete "Secondary Containment Assessment Page C".

Seismic:
For each tank, complete one "Hydrostatic and Seismic Analysis" page.

Discrepancies/Non compliant issues:
For all initial discrepancies, complete an "Initial Discrepancies and Corrections Taken" page – noting discrepancies and fixes, including dates of completion.

[1] California Code of Regulations, title 22, sections 66265.191, 66265.192, and 66265.193

Model
Tank and Secondary Containment
Assessment Document

This document was prepared for:

Company name
Address
City, California ZIP

Tank/system identification:

Include a description of the tank/tank system that is being assessed. Examples: Permit by Rule system (FTU#1) or Tank No. T-10A

Date of inspection(s)/assessment:

Include all inspection and/or assessment dates. Please include any dates used to confirm data or to examine changes made to tank or system as a result of recommended corrections.

This report consists of pages.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who mange the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Engineer's name
License Number
License Type
Address of engineer
City, State Zip

Place and sign stamp
Stamp and sign ONLY if tank/system meets all regulatory requirements

Inspector name (if supervised by assessor above)

Date stamped/signed:

Tank Assessment Page

Tank Name/marking:_____
Tank age:191(g)(3)/192(k)(3)_____
Remaining service life:191(g)(10)/192(k)(11)___

Tank Construction:

- Shape:
- Orientation: 191(g)(1)/192(k)(1)
- Location (above/below ground):
- Material of construction: 191(g)(2)(A)/192(k)(2)(A)
- Thickness and method used to determine: 191(g)(2)(B)/192(k)(2)(B)
- Lining material & thickness (if applicable):
- Corrosion Protection equipment: 191(g)(5)/192(k)(5)
- Structural support:
- Other identifying features:

Piping and ancillary equipment (pumps): 191(g)(2)(C&D)/192(k)(2)(C&D)

- Piping Material of Construction:
- Piping Diameter:
- Pump location(s):
- Pump type(s)/capacities:

Material Storage:

- Material and characteristics: 191(g)(7)/192(k)(8)
- Specific Gravity:
- Operating Capacity:

Chemical compatibility findings: The materials identified above are compatible for contact with or proximity to the equipment, tank or tank system in this assessment. Initials:

Visual Inspection: 191(g)(8)/192(k)(9)

- Tank parameters at time of inspection (empty, etc.):
- Acute visual evidence of leaks:
- Condition of interior surface:
- Condition of exterior surface:
- Condition of nozzles, flanges, fittings at tank:
- Condition of piping:

Visual Inspection findings: A visual inspection of the tank and its affiliated pumps, piping and ancillary equipment did not reveal signs of leaks, corrosion, weld cracks or breaks, or scrapes in protective coating which may cause a release from the tank system. A description of all discrepancies noted during the visual inspection is included with this report. Initials:

Seismic/Anchoring:

Seismic/dynamic/hydrostatic load calculations provided with “Hydrostatic and Seismic Analysis” page or as Attachment(s) _____

Seismic/Anchoring findings: The tank as designed and operated, and the containment area in which it is located are adequately anchored and are seismically sound. Initials:

Leak Test: 191(g)(9)/192(k)(10)

Brief description of leak test, including type of test used, and results of test:

Integrity testing findings: Based on the above noted integrity test and the results obtained from that test, the tank has sufficient integrity for its intended use. Initials:

Tank Drawing: 191(g)(2)(E)/192(k)(2)(E))

Facing
N E S W

Provide a drawing of the tank, indicating the dimensions of the tank, locations of seismic devices, piping, pumps and other ancillary equipment. Circle the direction facing as seen in the lower left corner of the map.

Tank Diameter:
Tank Height:
Tank Gross Capacity (Volume):

Secondary Containment Assessment Page A:

The secondary containment calculations provided for on this page are for secondary containment systems that utilize an **external liner system (bermed area)** for containment.

Overhead view:

↑
North

(Include all measurements. Does not need to be to scale)

Cross sectional (lateral) view:

Facing
N E S W

(Include all measurements. Does not need to be to scale)

Volume calculation(s) 66264.193(e)(1)(A)

Aggregate volume of all tanks located in this area:
When calculating tank volumes, be sure to include all ancillary equipment and piping affiliated with the tank and/or tank system
(a)10% of aggregate volume:
(b) Volume of largest tank with the boundary:

(c) Volume from a 24 hour, 25-year storm:
http://www.nws.noaa.gov/oh/hdsc/On-line_reports/
(d) Calculated volume of the area:

[Larger of (a) or (b)] + [Containment area * (c)] must be < (d)

Company Name Tank/Tank System identification

Design of containment area: 66264.193(e)(1)(D) and 66264.193(b)(1 & 3)
Provide a brief description of the construction and design of the containment area including materials, all coatings used to prevent migration of wastes from the area, leak detection equipment, and a discussion of the compatibility and incompatibility of the containment surface with any waste it may come in contact with.

Visual inspection of containment area: 66264.193(e)(1)(C)
Provide a brief description of the condition of the containment area, including any cracks, gaps, or wastes in the containment area at the time of inspection.

Site Security: 66265.14
Provide a brief description of the site security and ??????

Secondary Containment findings: The secondary containment system is of sufficient capacity and condition for the containment of releases from all tanks and ancillary equipment. Initials:

Secondary Containment Assessment Page C:

The secondary containment calculations provided for on this page are for secondary containment systems that utilize a **vaulted system (set below the grade of the earth's surface)** for containment.

Overhead view:

↑
North

(Include all measurements. Does not need to be to scale)

Cross sectional (lateral) view:

Facing
N E S W

(Include all measurements. Does not need to be to scale)

Volume calculation(s) 66264.193(e)(2)(A & B)

Aggregate volume of all tanks located in this area:
When calculating tank volumes, be sure to include all ancillary equipment and piping affiliated with the tank and/or tank system

(a)10% of aggregate volume:

(b) Volume of largest tank with the boundary:

(c) Volume from a 24 hour, 25-year storm:
http://www.nws.noaa.gov/oh/hdsc/On-line_reports/

(d) Calculated volume of the area:

[Larger of (a) or (b)] + [Containment area * (c)] must be < (d)

Design of containment area: 66264.193(e)(2)(C, D, E, & F) and 66264.193(b)(1 &3)

Provide a brief description of the construction and design of the containment area including materials of construction including joint sealants, all coatings used to prevent migration of wastes from the vault, all coatings used to prevent migration of groundwater into the vault (where applicable), leak detection equipment, and all vapor control devices for vaults used to store ignitable wastes. Also include a discussion of the compatibility of the containment surface with any waste it may come in contact with.

Visual inspection of containment area: 66264.193(e)(2)

Provide a brief description of the condition of the containment area, including any cracks, gaps, or wastes in the containment area at the time of inspection as well as the condition of all coatings.

Secondary Containment findings: The secondary containment system is of sufficient capacity and condition for the containment of releases from all tanks and ancillary equipment. Initials:

Secondary Containment Assessment Page B:

The secondary containment calculations provided for on this page are for secondary containment systems that utilize a **double walled tank** for containment.

Overhead view:

↑
North

(Include all measurements. Does not need to be to scale)

Cross sectional (lateral) view:

Facing
N E S W

(Include all measurements. Does not need to be to scale)

Design of tank: 66264.193(e)(3)
Provide a brief description of the construction and design of the tank, including materials of construction, corrosion protection measures for both inner and outer surfaces of the metal tanks, and leak detection equipment.

Visual inspection of containment area: 66264.193(e)(2)
Provide a brief description of the condition of the tank.

Secondary Containment findings: The secondary containment system is of sufficient capacity and condition for the containment of releases from all tanks and ancillary equipment. Initials:

Hydrostatic and Seismic Analysis Tank Name/marking:_____

Overhead view:

↑
North

(Include all measurements. Does not need to be to scale)

Cross sectional (lateral) view:

Facing
N E S W

(Include all measurements. Does not need to be to scale)

Please provide a drawing of the seismic/hydrostatic anchorings used and their spatial relationship to the tank.

At a minimum provide the following:
Calculation of the seismic load of the tank (Attachment _____)

Calculation of overturning moment of tank (Attachment _____)

Safety Factor

Demonstration that the resisting moment is greater than the overturn moment

Example of seismic load calculation:
In doing a seismic load calculation, specifiy

Variables:
Seismic Zone (Table 16-I, 1997 UBC)_____ ; Z = _____
Soil Profile type (Table 16-J, 1997 UBC) = _____
Site Coefficient (Table 16-J, 1994 UBC) = _____
Occupancy Importance Factor (Table 16-K, 1997 UBC) = I_p = _____
Coefficient a_p (Table 16-O, 1997 UBC) = _____
Component Factor R_p (Table 16-O, 1997 UBC) = _____
Distance to Known seismic source = _____ km
Seismic source type (Table 16-O, 1997 UBC) = _____
Near Source Factor (Table 16-S, 1997 UBC) = N_s = _____
Seismic Coefficient (Table 16-Q, 1997 UBC) = C_a = _____
Specific Gravity of Liquid = _____
Specific Gravity of Shell material= _____
Poisson Ratio = μ = _____
Tank Height/Length = H = _____ inches
Tank Diameter = D = _____ inches
Tank Radius = R = _____ inches

Calculate the seismic load of the tank
W_c = Weight of contents = (Specific gravity of liquid)(R)(H)(0.0361)(π)
Where SG= Specific Gravity
R= tank radius