



Dow Chemical Canada ULC
Bag 16, Highway 15
Fort Saskatchewan, Alberta
T8L 2P4, Canada

February 19, 2016

Troy Fleming
General Manager, Infrastructure & Community Services
City of Fort Saskatchewan
10005 – 102 Street, Fort Saskatchewan, AB T8L 2C5
Via email – tfleming@fortsask.ca

Subject: Proposed Amendment to Land Use Bylaw C3-16
Dow Chemical Canada ULC (Dow) Stakeholder Input

Dear Mr. Fleming,

Dow has received notice of the Tuesday February 23, 2016 Public Hearing with respect to Bylaw C3-16. The purpose of this letter is to provide a written submission for consideration. Dow has concerns with the proposed change in zoning of the subject lands from Industrial Reserve (IR) to Light Industrial (IL) near our property.

As a verified Responsible Care company and active members of Northeast Region Community Awareness and Emergency Response (NR CAER), Dow strives for an open and transparent dialogue with our community members regarding our site operations. For more than 55 years we have been working to gain the trust and respect of our local stakeholders and residents by demonstrating a commitment to the safety of our employees, neighbours and the environment. It is with a view on public safety that we welcome the opportunity to provide input into this proposed amendment to Bylaw C3-16.

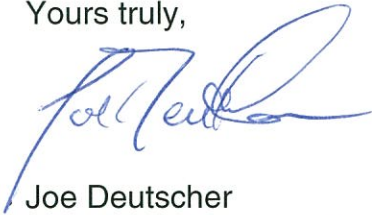
Dow has provided feedback in the past on this topic, most recently via a letter on November 13, 2013 after a productive meeting between Dow personnel and Luis Esteves of Scheffer Andrew Ltd. on November 4, 2013. A copy of this 2013 feedback is attached for consideration during the period of by-law public engagement.

Dow's original concerns with proposed development remain: minimizing use of the land by transient populations (retail, restaurants, activities that encourage overnight stay) to ensure those living within our Emergency Planning Zone be fully aware of the actions to be taken in the case of a Dow site emergency; and minimizing the road access to facilitate effective Highway 15 road closure in the case of emergency.

In the interest of public safety we respectfully request the City of Fort Saskatchewan review their process for risk management for this proposed bylaw change and future development to ensure it is reflective of the emergency response realities of the industry that operate in this region.

For further information or clarification, please contact Marcella deJong at 780-998-8529.

Yours truly,

A handwritten signature in blue ink, appearing to read 'Joe Deutscher', with a stylized flourish at the end.

Joe Deutscher
Site Director Alberta Operations

Attachments

Copy: Matthew Siddons, via email msiddons@fortsask.ca



Dow Chemical Canada ULC

Bag 16, Highway 15
Fort Saskatchewan, Alberta
T8L 2P4, Canada

November 13, 2013

Luis Esteves
Scheffer Andrew Ltd.
12204 – 145 Street NW
Edmonton, AB T5L 4V7

Subject: Josephburg Road North Industrial Area Structure Plan
Dow Chemical Canada ULC (Dow) Stakeholder Input

Dear Mr. Esteves,

Thank you for meeting with Dow personnel on November 4th, 2013 at the Dow Chemical Canada ULC Fort Saskatchewan Site. We are pleased to provide feedback on the Josephburg Road North Industrial Area Structure Plan as well as a copy of the meeting presentation.

As a verified Responsible Care company and active members of Northeast Region Community Awareness and Emergency Response (NR CAER), Dow strives for an open and transparent dialogue with our community members regarding our site operations. For more than 50 years we have been working to gain the trust and respect of our local stakeholders and residents by demonstrating a commitment to the safety of our employees, neighbours and the environment. It is with a view on public safety that we welcome the opportunity to elevate our concerns about the proximity of some elements of the proposed development to our Dow Fort Saskatchewan site.

In general, Dow supports the City's proposed development as Medium Industrial. However, due to the proximity of the development area to our site, Dow would like to raise our concerns (and propose limitations) on the types of businesses and activities allowed to minimize the potential impact in case of a Dow emergency. In particular, any vehicle oriented use that could result in overnight stays or accommodations should not be permitted. Any use involving public retail should not be permitted. Our concerns rest with the application of due diligence according to Directive 71, that requires us to ensure those working or living within our Emergency Planning Zone be fully aware of the actions to be taken in the case of a site emergency. This is simply not possible with a transient populace. Long term occupants with an understanding of Dow and other area industry activities with knowledge of Shelter in Place protocols are desired. In case of an emergency, a detailed notification plan needs to be developed by the City that will ensure notification of all parties within 15 minutes of an emergency declaration.

At the meeting, you showed Dow representatives the approved City of Fort Saskatchewan Transportation Plan associated with this development. Dow has significant concerns about the planned access points to the development from Highway 15. Currently, in an emergency, Highway 15 can be closed at two points: 119 Street and Range Road 220. The planned additional intersections allowing access into the proposed development area will complicate emergency closures of Highway 15 and therefore, access to the development area should be restricted to RR220 and 119 Street. Dow has held discussions with our local RCMP detachment regarding the delegation of responsibility in support of public safety. Due to our proximity and speed at which we could re-route traffic, Dow would have an expectation to fulfill this role on behalf of our first responders.

Again, please know we appreciate the forethought in engaging local industry to have the dialogue on the development to be occurring across from our site operations. In the interest of progressive economic development, emergency management and public safety, we would like to further clarify the future plans for this land based on our concerns outlined in this correspondence. For further information or clarification, please contact Marcella deJong at 780 - 998 - 8529.

Yours truly,

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Site Director, Alberta Operations

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Copy: Kelly Kloss, City Manager, City of Fort Saskatchewan
James Clark, Fire Chief, City of Fort Saskatchewan



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Dow Chemical Canada ULC Fort Saskatchewan Site





Josephburg North Industrial Area Structure Plan

November 4, 2013 Meeting Attendees

Scheffer Andrew Limited:

- Luis Esteves, Senior Planner
- Kyle Payne, Junior Planner

Dow Chemical Canada ULC:

- Mike Dziarmaga, Responsible Care Leader
 - Trevor Griffith, Emergency Services Leader
 - Luc Van Belleghem, Process Safety
 - Marcella deJong, Regulatory Affairs
-



Dow Worldwide

- Mission: To passionately innovate what is essential to human progress by providing sustainable solutions to our customers.
 - Annual sales of \$53.7 billion USD in 2010
 - Over 50,000 employees globally
 - Serves customers from 188 sites in 35 countries across the globe
 - Produces products for a wide-range wide range of markets that are vital to human progress: food, transportation, health and medicine, personal and home care, and building and construction
-



Fort Saskatchewan Site Overview

- Operating in Fort Saskatchewan since 1961
 - 2,128 acre site representing a \$2.7 billion investment
 - World-scale plants producing seven billion pounds of product each year
 - Workforce
 - approximately 500 Dow employees and 50 MEGlobal employees
 - between 200 and 400 contractors on average
 - Economic Impact
 - pay over \$6.4 million in property taxes
 - spend over \$1.9 billion per year in Alberta to run operations
-

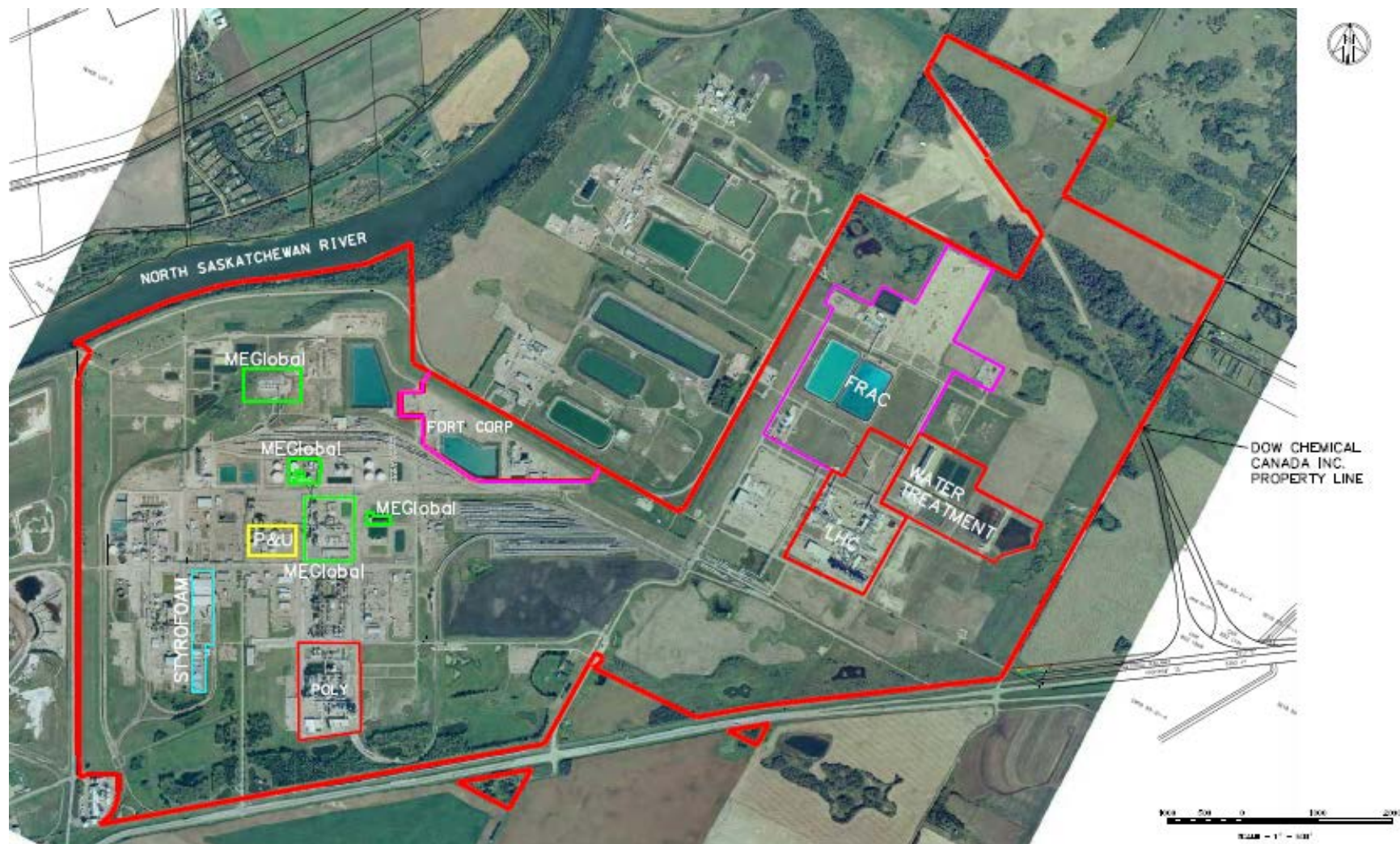


Fort Saskatchewan Site Overview

- Dow Manufacturing units include:
 - Polyethylene
 - Light Hydrocarbons including Water Treatment and C2 Cracker
 - Power and Utilities
 - JV Manufacturing plants include:
 - Fractionator & Storage (Keyera, Shell, Dow)
 - Ethylene Storage Facility, "Fort Corp" (Pembina, Dow)
 - MEGlobal Glycol (PIC, Dow)
-



Fort Saskatchewan Aerial View





What do we make at the Fort?

Ethylene

- produced by heating ethane to a very high temperature which cracks the molecule into many different compounds. The molecules reform into other compounds – including ethylene.

Ethylene Glycol (produced by MEGlobal)

- used by customers to make antifreeze, aircraft deicing fluids, polyester clothing, plastics for car parts and bottles

Polyethylene

- used by Dow's customers to make plastic wrap, storage bags, food packaging, plastic toys
- produced in the form of small pellets

Power

- Two Dow Cogen power units
 - One TransAlta-Strongwater gas Cogen power unit
 - Supply power and utilities on site
 - Can buy from / sell to Alberta Grid
-



What are the unexpected scenarios that could happen at the Fort that we work hard to prevent from EVER happening?

First, an important definition:

ERPG 2: Emergency Response Planning Guideline – 2

- The max air borne concentration it is believed below which all individuals could be exposed for up to 1 hr without developing irreversible health effects or not be able to take protective action
-



Potential Scenarios : Assume 'Worst Case Scenario' failure, no intervention and standard atmospheric conditions:

- Dow Water treat chlorine cylinder release
 - ERPG 2 of 3 ppm, 11 km
 - MEGlobal ethylene oxide process release
 - ERPG 2 of 50 ppm, 49 km
 - Highly flammable and expected to ignite before it leaves fence line
 - Polyethylene hydrochloric acid release
 - ERPG 2 of 20 ppm, 5 km
 - HCP or Site Logistics butadiene release
 - ERPG 2 of 200 ppm, 3 km
 - Highly flammable and expected to ignite before it leaves fence line
-



Potential Scenarios: Continued:

- HCP hydrocarbon release (flammable only):
 - propylene, propane release ERPG 2 n/a
 - Flammability .3 km beyond fenceline or mild pressure wave felt beyond fenceline
 - HCP hydrocarbon release (flammable and slightly toxic):
 - Pentane, ethylene release ERPG 2 of 2 km
 - Highly flammable
 - Flammability .4 km beyond fenceline or mild pressure wave felt beyond fenceline
-



How does Dow prevent Events with Offsite Impact?



Overview of Dow Process Risk Management Program

LEVEL 1: PROCESS HAZARDS ANALYSIS

- Fire & Explosion Index (FEI)
- Chemical Exposure Index (CEI)
 - RC/PHA Questionnaire
 - LOPA Target Factors*

LEVEL 2: RISK REVIEW

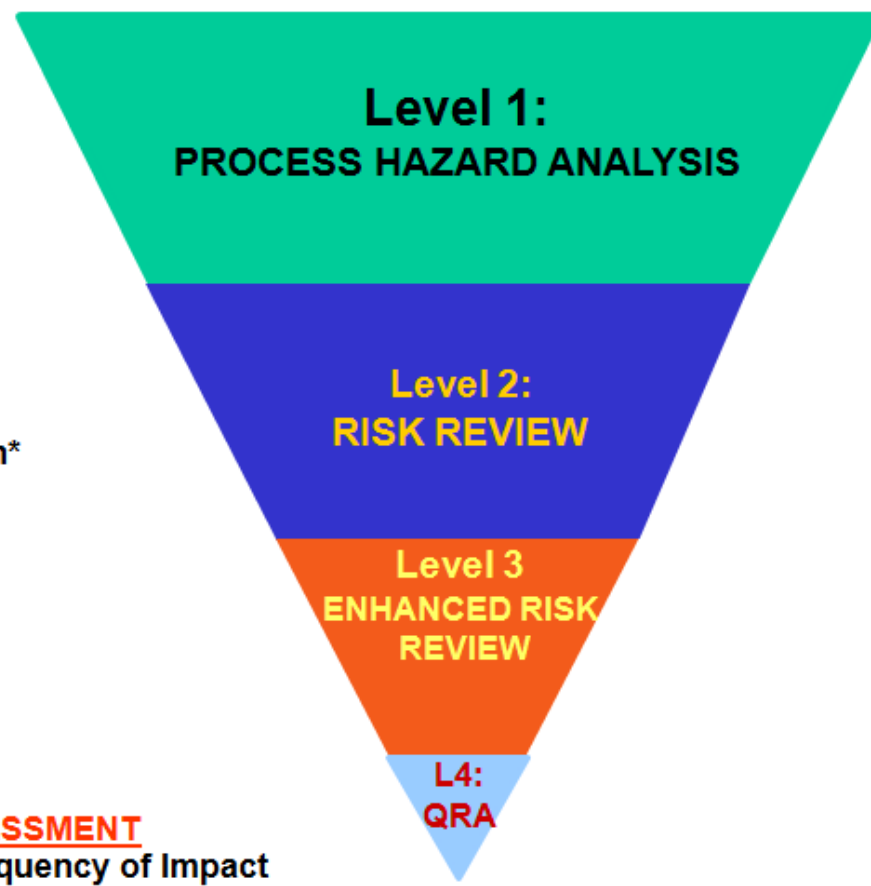
- LOPA* (Technologies new to Dow are HAZOP'd)
 - Cause-Consequence pair Identification*
- Explosion Impact (Building Overpressure) evaluation*
 - Structured Scenario Analysis

LEVEL 3: ENHANCED RISK REVIEW

- Dose-adjusted consequence analysis
 - Screen for QRA*

LEVEL 4: QUANTITATIVE RISK ASSESSMENT

- Combination of Consequence Analysis, Frequency of Impact
 - Focuses on highest risk activities

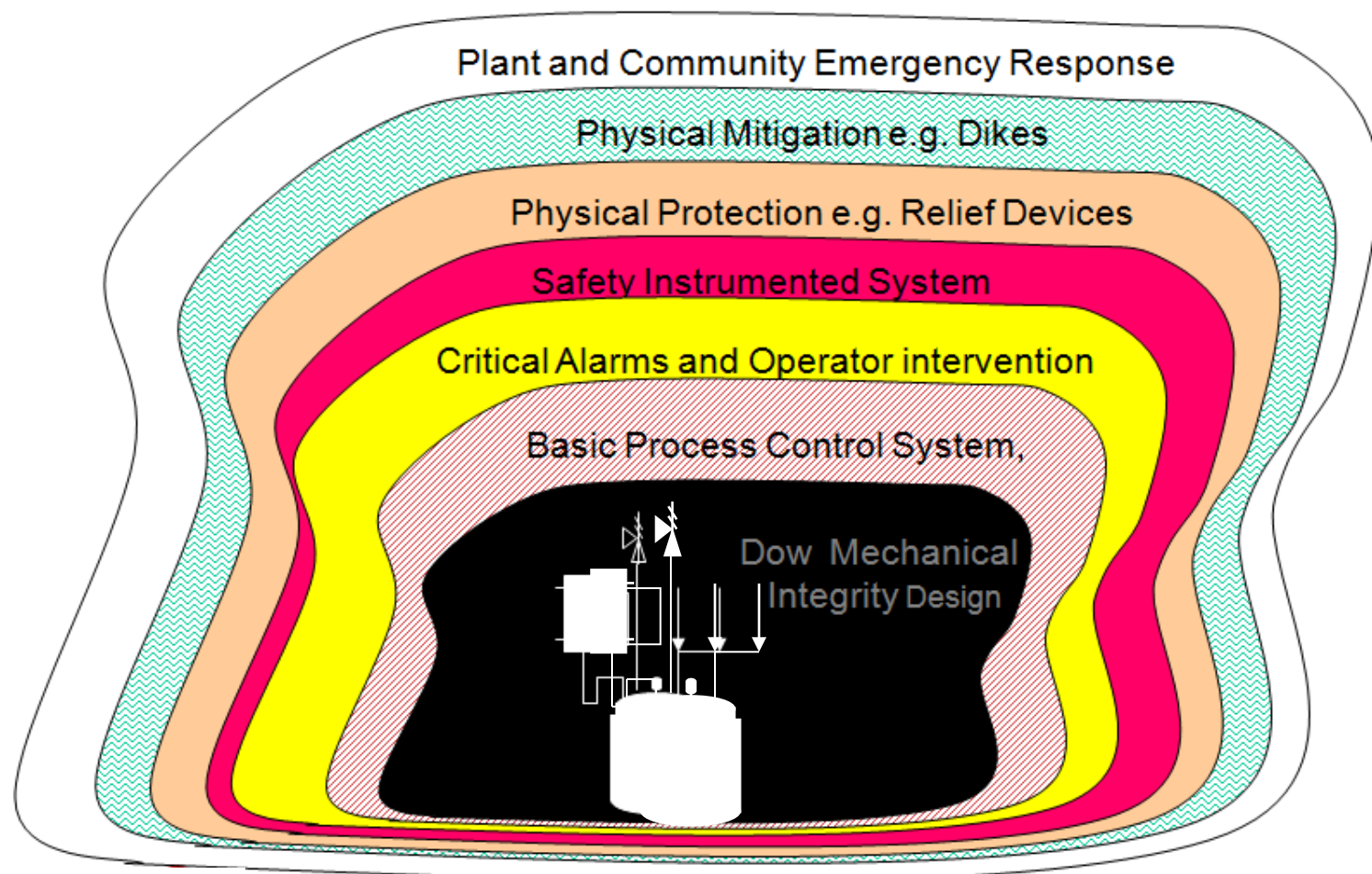




LOPA – Layer of Protection Analysis

- Identify every bad thing that might happen
 - Assign a number to it from 4 – 10 (target factor) e.g. a fatality = 6
 - Then, make sure you have enough independent protection layers to reduce the target factor to zero
 - Document this
 - Audit it long term to make sure the protection layers are maintained.
-

The LOPA “Onion”





How does Dow ensure appropriate response in the unlikely event of a situation that could have offsite impact?



Effective Response to Significant Emergency Events

- Control of emergency
 - Isolation of release
 - Prevention of escalation
 - Protection of site employees (eg. Site Shelter in Place)
 - Protection of Public
 - Shelter in Place - Callout to neighbours, City of Fort Sask
 - Traffic management (road and rail closures on/off site)
 - Virtual Emergency Operations Centers
 - Allows activation of critical response resources immediately vs having people report to site
-



Effective Response to Significant Emergency Events

- Initiating mutual aid support
- Safety of emergency responders
- Modeling of release
- External notifications



Effective Response to Significant Emergency Events

- Dow has modeled worst case and other scenarios of significance and developed specific procedures for how to manage these scenarios
- Dow routinely conducts emergency drills around these scenarios to test out the Site Emergency Plan
- Dow works with NRCAER, City of Fort Saskatchewan, etc.

Example Scenarios

- HCL SOS
- EO
- Ethane



Risk Assessment Report

- The City of Fort Saskatchewan commissioned Doug McCutcheon and Associates Consulting to provide a Risk Assessment of the proposed development area.
 - Draft report was provided to stakeholders on February 9, 2009
 - Report recommendations informed the City of Fort Saskatchewan's zoning for this development area
 - Dow Preferences – Medium Industrial
 - Not: residential, hotels, truck stops, restaurants, any use that could result in overnight stays or accommodation
 - Long-term occupants with knowledge of Emergency Response / Shelter In Place.
-



Medium Industrial - Dow Recommendations for this location:

Goal: Minimize potential for overnight use or transient occupants

Appropriate:

- ✓ Automotive & Equipment Repair
Rental
- ✓ Contract Engineering / Projects
- ✓ General Industrial Uses
- ✓ Storage Facility
- ✓ Warehouse Sales, Distribution
- ✓ Agricultural
- ✓ Communications Tower

Not Appropriate:

- X Public Retail
 - X Bulk Fuel Depot
 - X Auctioneering Facility
 - X Gas Bar
 - X Service Station
-



Discussion