



Town of Fairfield

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WATER PROTECTION AND LAND REUSE
REMEDIATION DIVISION

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Commissioner Daniel C. Esty
Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Re: Comments on the Exide Group, Inc. Mill River SedRAP and OLISP General Permit
Registration Form for Coastal Remedial Activities Required by Order

Dear Commissioner Esty:

The Fairfield Conservation Commission reviewed Exide's proposed Mill River sediment remediation plan (SedRAP), and its application for a state tidal wetland and structures dredging and fill general permit in the context of Fairfield's efforts to help restore the Mill River. The Commission has cooperated with the Connecticut DEP and Exide for many years in their combined efforts to bring this project about.

While the Commission supports Exide's efforts to remediate the lead-contaminated sediments in Mill River, it is concerned that Exide's approach in doing so, and its lack of detail in the proposed plan, and filing of permit applications prior to the Commissioner's approval of Exide's Proposed SedRAP, may be inconsistent with the provisions of its Consent Order, #SRD-193, and counterproductive of assuring a successful remediation of the contaminated sediments in Mill River.

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Commissioner Daniel C. Esty

Re: Comments on the Exide Group, Inc. Mill River SedRAP and OLISP General Permit
Registration Form for Coastal Remedial Activities Required by Order

The Commission offers the enclosed comments in an effort to clarify, enhance and strengthen Exide's proposed sediment remediation plan for Mill River.

Please do not hesitate to contact this office if you have any questions in this matter.

Sincerely yours,



Thomas J. Steinke

TJS/jm

enc:

cc: M. Tetreau, First Selectman, C. McCarthy-Vahey, K. Kiley, Bd. of Selectmen; S. Lesser, T. Atty.; SC; CC; HMC; P. Bowe, C. Fusaro, T. Iott, T. Selmeski, M. Johnson, S.. Gephard, CTDEEP; D. Carey, K. Derosia-Banick, DA-BA; Ray, COE; J. Shaw; K. Braun, Esq.; A.S. Jacobson, E. H. Jones; K. Money, J. Fallon, Esq. Exide; Sen. J. McKinney; Reps. B. Kupchick; K. Fawcett; A. Hwang

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Comments of the Fairfield Conservation Commission
Concerning the Exide Group, Inc.
April 2012
Remedial Action Plan for Lead Impacted Sediments
February 27, 2013

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I. GENERAL COMMENTS

In summary, upon its review of the CTDEEP Consent Order #SRD-193 of October 20, 2008, the Exide Proposed Mill River Sediment Remediation Plan of April 2012 (SedRAP), the NPDES permit application, and the OLISP General Permit Registration, the Fairfield Conservation Commission believes that the Exide documents have been filed without necessary details, without identifying all required permitting agencies, and without obtaining the required approval of the Commissioner for the SedRAP before Exide may file its permit applications. In doing so, Exide actions are inconsistent with, and contrary to, the intent and the specific terms and conditions of the enabling enforcement action, Consent Order #SRD-193 sections B.2.d.(6) and B.2.f.(1) and (2), and should therefore be withdrawn by Exide or be rejected by the CTDEEP.

A. Consent Order #SRD-193

The SRD-193 consent order sections are predicated on a logical, technically sound progression of mandatory actions that are intended to achieve the successful remediation of the lead-contaminated sediments in Mill River. They require Exide to submit a “detailed” sediment remediation plan and await the Commissioner’s approval of the proposed plan prior to Exide’s applying for relevant permit applications. This sequence was required apparently because the CTDEEP and Exide wished to inform the public and elicit local knowledge and expertise concerning the project, and to ensure that the approved remediation plan is scientifically and technically sound, complete, and incorporates all the elements needed for a regulatory agency to appreciate the significance of the project and impose appropriate permit conditions. Exide has skipped this step, i.e., waiting for the Commissioner’s approval of the proposed remediation plan, and jumped ahead to the permit application stage asking regulatory agencies to approve a permit without first knowing what the Commissioner will approve in the remediation plan.

Further, the Conservation Commission reviewed the cited Consent Order, #SRD-193, and notes that Section A.25 requires Exide to provide plans and implement a supplemental investigation and remediation of the CTDOT highway stormsewer in the Post Road, which work is now in progress. This section is derived from earlier investigations when Exide was ordered to clean and video-inspect the Post Road stormsewer in front of its factory and the Railroad stormsewer along the rear of its factory as these two pipe systems were known to have discharged factory wastes in the past. In 2000, without first cleaning the pipes, Exide was unsuccessful in its efforts to video-inspect either of these drain systems, and, inexplicably, CTDEEP ordered Exide to only return to address the CTDOT Post Road drain pipe in SRD-193 section A.25. This requirement to investigate these drainage systems is a logical extension of CTDEEP’s efforts to ensure that potential sources of lead are found and remediated so that they may not contribute to future contamination after the river sediments are cleaned. The railroad drain is still an open order that must be resolved.

B. Proposed Mill River Sediment Remediation Plan (SedRAP)

Further, our records show that while presented to selected limited audiences (town administration, public officials, and private property owners) in 2011 and 2012, the referenced Exide Proposed SedRAP has not been presented at a meeting for the general public as Exide and the CTDEEP assured that it would be. Further, the CTDEEP published its December 20, 2012 notice of the public meeting on the proposed SedRAP and then published a two-day advance

public notice of the Commissioner's Tentative Determination to Approve the Exide NPDES permit on January 8, 2013 for the CTDEEP's January 10, 2013 public meeting for a combined review of the Exide SedRAP, the Exide Office of Long Island Sound Programs application, and the Exide NPDES application, all within a two hour SRO public meeting within which the CTDEEP and Exide allowed forty-five minutes for public comment on all three subjects.

Of three versions of the Exide SedRAP, only two versions have been provided to the public as may be inferred from Exide's actions. In his January 10, 2013 comments on the proposed remediation activities, Exide's representative stated that its dredge-cell silt curtain would be anchored to the river bottom, which is contrary to Exide's SedRAP that specifically states Exide's intent to suspend the silt curtain off the bottom as a design intention. During this public meeting, seven members of the public were permitted to speak, and when one of them requested information on why the scope of Exide's contaminated sediment removal project had expanded nearly thirty percent in volume with no explanation in the application or the two previous versions of the SedRAP, the CTDEEP moderator responded by stating that the Exide representative had just stepped out of the room and would soon return to answer the question – neither of which occurred. The public has not yet had an opportunity to be fully informed or to comment effectively on this Exide matter.

C. NPDES APPLICATION AND OLISP GENERAL PERMIT REGISTRATION

Further, Exide cites its Proposed Mill River Sediment Remediation Plan of April 2012 as the basis for Exide's NPDES permit application and its OLISP General Permit Registration, which the Conservation Commission finds incomplete. A review of Exide's NPDES application and OLISP GP Registration, and the Proposed SedRAP, discloses the fact that Exide has deferred submittal of the project details and work plan until this information is developed and provided by the successful bid contractor for the remediation project (e.g., see below SedRAP sect. 3.2, p.17 [p. 16 this report]). In essence, Exide states that it must await the final remedial action plans of the successful bid contractor before it can provide the details needed for the Commissioner to approve the remediation plan which will in turn enable Exide to file its permit applications.

By acting on the Commissioner's Tentative Determination to Approve the NPDES application prior to his approval of the enabling Proposed Mill River SedRAP, the CTDEEP will further confuse and compound Exide's error introduced when Exide prematurely submitted its applications contrary to the terms of its consent order.

CTDEEP should implement a revised consent order under the provisions of SRD-193 Section 13, and require Exide to provide and implement a supplemental upland plan for investigation, including cleaning and video-inspection, of the contents and condition of the railroad drain system.

In light of these facts, the Conservation Commission believes that Exide Group, Inc.'s OLISP GP, NPDES, and all other applications and registrations, should be withdrawn by Exide or be rejected by the CTDEEP until such time as Exide complies with Consent Order #SRD-193.

While the Exide remediation plan may be technically eligible for consideration for an OLISP General Permit Registration Form, the importance and need for successful remediation of a large area of the Mill River estuary with multiple TMDL impairments in a technically complex plan with strong public interest and concerns, warrants review of the Exide proposals as individual permit applications.

II. SPECIFIC COMMENTS

(following pagination and numerical order of sections in the SedRAP of April 2012)

A. Background

Exide has submitted for review and approval by the CTDEEP its proposed "Remedial Action Plan for Lead Impacted River Sediments Mill River Study Areas I – V, Dated October 2011, Revised April 2012" (SedRAP), pertaining to CTDEEP Consent Order No. SRD-193, in which Exide proposes to dredge 21,440 cubic yards of lead-contaminated sediment from five remediation areas or reaches of the river totaling 35 acres and over 4,000 feet of the Mill River above and below the tidemill dam located at Harbor Road.

As noted in the SedRAP, Exide has been complying over several decades with multiple orders by the CTDEEP to investigate the nature and extent of lead contamination in and adjacent to its upland factory site and in the sediments of Mill River; to locate and secure the sources of contamination; and to remediate the contaminated upland soils, groundwater, and Mill River sediments affected by Exide's factory operations. The lead contamination exists due to discharges of lead from battery manufacturing following Exide's acquisition of the aluminum factory property from ALCOA in 1948. Following its cessation of battery manufacturing in 1981, Exide complied with a CTDEEP order in 1983 to remediate 4,100 cu. yds. of contaminated sediment in the mill pond section of Mill River located between the Post Rd. and the railroad adjacent to Exide's property. The target level for residual lead was 500 mg/kg and lead remediation was conducted with a hydraulic cutterhead dredge working within a floating silt curtain enclosing the active dredge site or "dredge cell". After chasing resuspended sediments with lead exceedances, Exide eventually removed a total of 4,383 CY of sediment. After successful remediation of the site in 1983, the river was recontaminated to the extent we find it in today. Exide has nearly completed its upland remediation activities as it addresses the factory leaching field and easterly bank of the mill pond, and now proposes to again address the Mill River in its proposed April 2012 SedRAP.

In a parallel matter, the CTDEEP and Superior Plating Company of Lacey Place have been addressing chromium contamination of soil, groundwater, and river sediments along the shore of Mill River opposite the Exide factory. Similar to Exide's Lead-SedRAP subject matter, the chromium review suggests that the Superior Plating Company will also need to address the remediation of chromium exceedances in the soils, groundwater, and Mill River sediments in the future. The three drawings accompanying the CTDEEP October 12, 2012 compliance letter to Superior Plating Company depict the chromium sample locations in the river sediments that are to be addressed in a related remedial action plan.

Much of Exide's SedRAP concerns and activities are related to Exide's proposal to conduct its in-water sediment remediation project during the normally protective seasons for

spawning fish and shellfish. During a CTDEEP meeting on November 10, 2010, Exide proposed to local, state and federal agencies, a year-round waiver of their spawning season prohibitions that would normally be imposed on Exide when it stated that it believed that it could conduct its dredging activities and demonstrate no adverse effects on the protected spawning species; and therefore should be eligible for consideration of having no spawning season restrictions on its in-water remediation activities. Exide has not yet demonstrated its ability to meet that in-water performance standard.

B. Protective Spawning Seasons

The question of allowing in-water dredge remediation activities during spawning seasons has particular significance to Fairfield and to the river herring and shellfish that are dependent upon protective water quality in Mill River. River herring, alewives and Blueback herring, are anadromous fish species that live as adults in the Atlantic Ocean and in the spring of the year return to their natal rivers and streams to spawn. There is a relict population of perhaps several hundred adults of each species in Fairfield that are greatly hindered in their spawning runs by the obstruction of the tidemill dam. After passing the tidemill, the adult herring now go no further than the spawning pool beneath the Samp Mortar Dam spillway. Along the east coast, these species have experienced plummeting populations due to dams and loss of spawning habit, water pollution, predation, and over-harvesting. As a result, these species were nominated in 2011 for consideration under the Endangered Species Act and the National Oceanic and Atmospheric Administration (NOAA) has made a preliminary determination that supports the concern thereby resulting in a 90-day finding of their being Candidate Species with a final determination expected in March 2013. The Mill River herring populations would be well-served by protecting the water quality and the river passage on which they depend.

The Mill River estuary is also one of the most productive shellfish areas in Fairfield with its water quality and Natural Beds supporting hard clam and oyster populations that form a base for seed transplants and relays for Fairfield's commercial and recreational shellfish programs. These shellfish populations, and the programs that they support, are entirely dependent upon high water quality that protects the spawning adults, the larvae in the water column, and the young spat-fall coming to rest on the bottom. Like river herring, these shellfish species' age classes and life forms may be adversely affected by sediment plumes and smothering sediment or mud waves on the bottom; and if the sediments also contain contaminated materials, they could have direct and acute toxic effects on the species.

C. Water Quality

The present water quality status of the Mill River is clearly described in the CTDEEP's April 11, 2011 State of Connecticut Integrated Water Quality Report to the EPA. The CTDEEP has listed the Mill River and Southport Harbor as impaired waters relative to Sections 305(b) and 303(d) of the federal Clean Water Act. The impaired uses are Fish Consumption – due to Lead; Habitat for Marine Fish and Other Aquatic Life and Wildlife – due to Chromium (total), Chromium (hexavalent) and Lead; Recreation – due to Chromium (total), Chromium (hexavalent) and Lead; Shellfish Harvesting for Direct Consumption Where Authorized – due to Fecal Coliform bacteria. The Potential Sources of the heavy metals are listed as Industrial Point Source Discharge and Contaminated Sediments. There is a health advisory

posted around the river against consuming blue-clawed crabs by pregnant women or children; and all swimming, fishing, and boating activities are discouraged in order to minimize disturbance and exposure to contaminated sediments. The 2012 Exide SedRAP will address the lead-contaminated sediments and may also include chromium-contaminated sediments that are co-located with the lead. Chromium that is not co-located with lead-contaminated sediment is expected to remain an impairment to the river until remediated in the future.

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Section 1 Introduction

1.2 Background – Project History Leading to Preparation of Remedial Action Plan

1.2.1 Summary of 1983 Remediation of Mill Pond

The report notes Exide's 1983 dredge remediation of 4,100 cubic yards (CY) of in-situ lead-contaminated sediment plus the recovery of 283 CY of additional contaminated sediment from chasing lead exceedances for a total volume of 4,383 CY.

The report does not reflect that the 283 CY (6.9 % of the 4,100 CY target of contaminated dredge material) of additional volume included secondary contamination requiring extended dredge recovery efforts of the unconsolidated semi-liquid mud wave and flocculated materials of the resuspended contaminated residual sediment layer about 4 to 10 inches thick covering the bottom of the dredged area. The report also provides no estimate for the volumes of resuspended sediment that were discharged from the dredge cell out into the open river water by flowing over the silt curtain; and after tightening the curtain head-rope the resuspended sediment flowed out around the ends of the silt curtain; and after securing the ends of the silt curtain and tightening the foot rope and anchoring it in the bottom, the water pressure from the tide, river, upland runoff, and variable dredge pumping rates apparently caused the resuspended sediment to blow out the fine-grained bottom silt beneath the curtain and then flow out into the river water. The attached photos depict these conditions arising from Exide's hydraulic cutterhead dredging in 1983 with incomplete control of resuspended sediment. The resuspended sediment problems arising from the 1983 hydraulic cutterhead dredge project were some of the reasons why Exide conducted its recent dredge technology search and had prepared responses to the questions it anticipated from the CT DEEP 2010 meeting participants related to Exide's proposal to allow it to conduct in-water dredging activities during protected spawning seasons.

Exide offers no information on the potential contamination posed by the resuspended sediment; it offers no results from any Elutriate test of the dredge slurry to characterize heavy metals or other pollutants in the dredged material that may be discharged to the river; it offers no information on a bioassay of the potential acute toxicity of the resuspended sediments to the life forms and age classes of the species to be protected during their spawning periods.

CTDEEP should require Exide to demonstrate what the potential effects of its remediation activities could be on the protected spawning fish and shellfish resources before it proposes actions that could have significant environmental impacts on those resources. The point being, that if Exide does not know the risk to protected spawning species and cannot control the discharge of contaminated resuspended sediment out of the dredge cell in order to protect the spawning species present during the protected spawning seasons when Exide proposes to dredge,

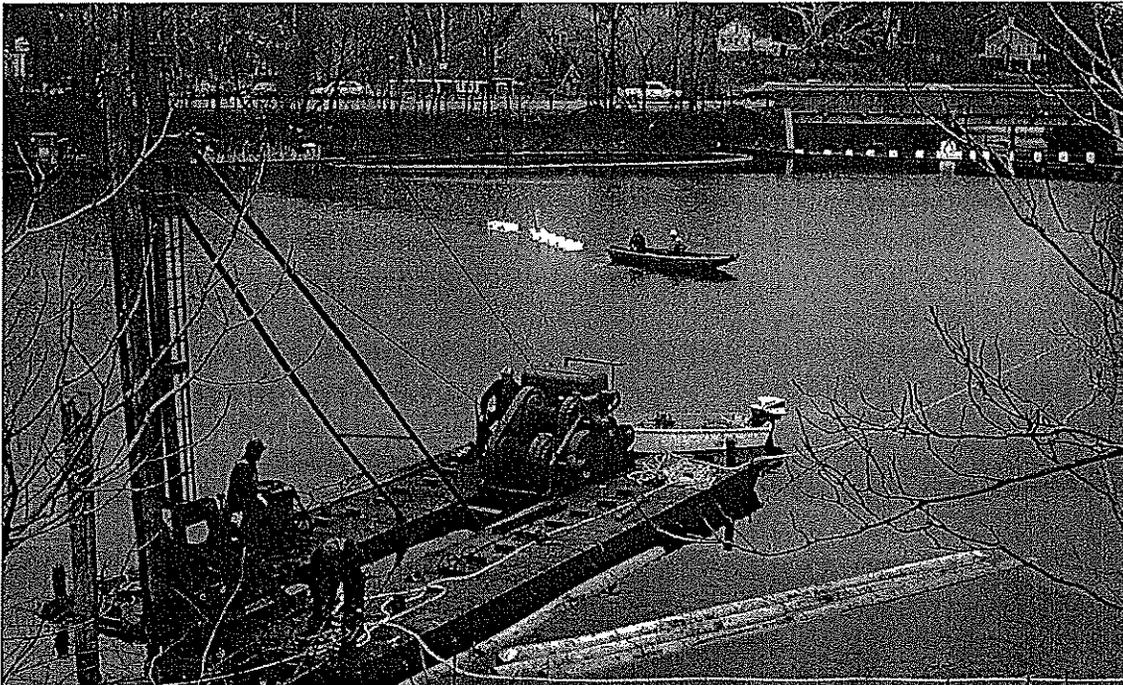
then Exide should not be conducting any in-water dredging activities during the spawning periods.

The attached photos depict elements of the 1983 dredging project wherein a hydraulic cutterhead dredge, with shroud and variable-speed pump and cutterhead rotation, was used to remove sediments and pump them to the upland treatment and transfer-disposal location at the factory site.



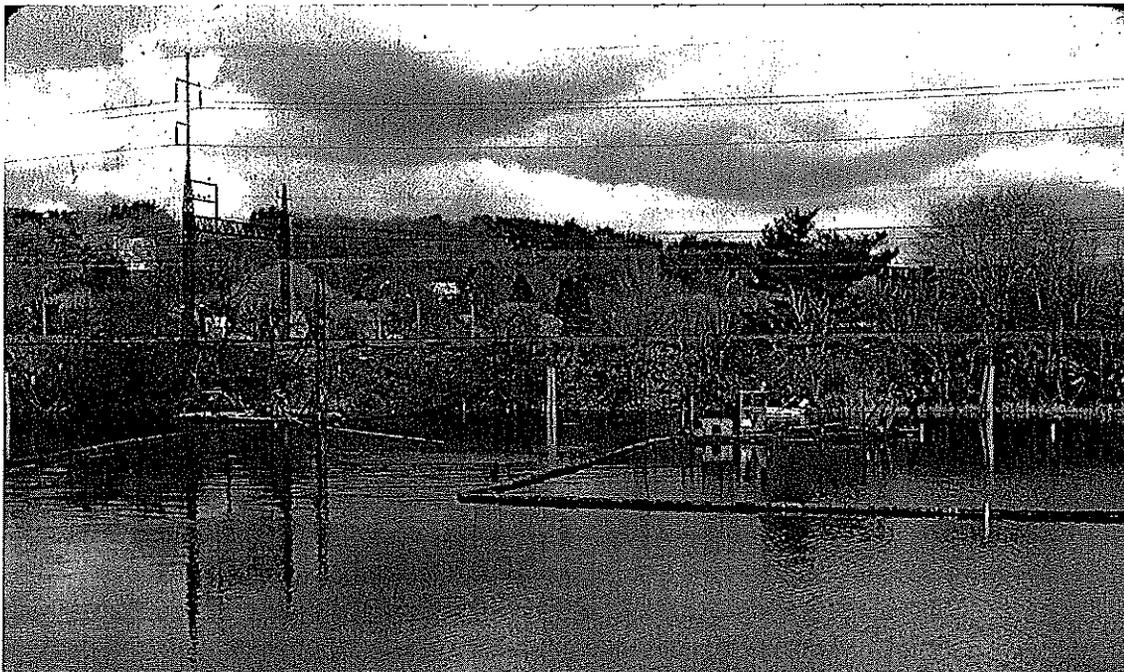
View of the 1983 Exide Mill River sediment remediation project. This is a hydraulic cutterhead dredge with shroud, variable-speed pump and cutterhead. The dredge shifts its position by moving along a cable suspended between timber pilings located around the shoreline. April 1983 tjs

Photo #1



View of Exide's 1983 Mill River sediment Lead remediation project. The work barge in the foreground is driving timber piling along the shoreline to support the cable for shifting the dredge as it cuts into the river bottom. '83 tjs

Photo #2



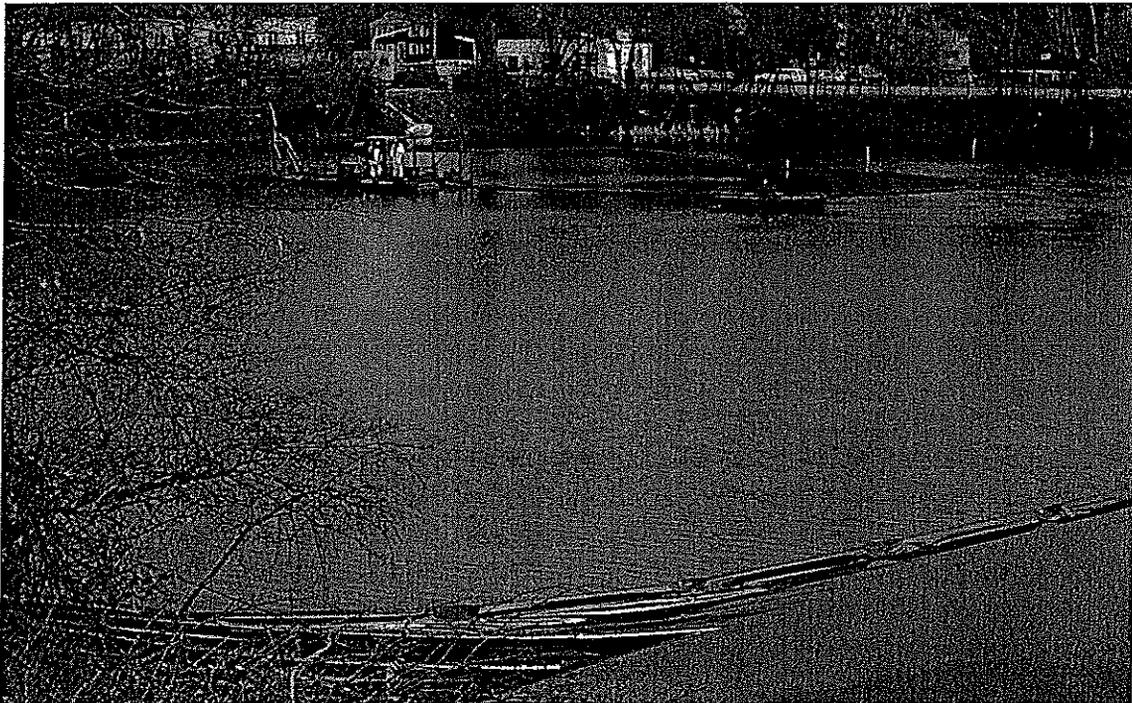
Looking northerly at Exide's 1983 Lead remediation project in Mill River sediments. The floating silt curtain is deployed around the dredge cell on the left side to protect the open water in the river; the pile-driver is installing timber support piles for shifting the dredge on cables; the hydraulic cutterhead dredge is dredging the bottom sediment and pumping it through a floating pipeline to the treatment and disposal area. April 1983 tjs

Photo # 3



View of Exide's 1983 remediation of Mill River mill pond looking from the railroad toward the Post Rd. The dredge cell silt curtain to the right is suspended from the floating boom and is intended to protect the open water in the Mill River. Note the oil slick in the foreground contained within the boom. April 1983 tjs

Photo # 4



View of Exide's 1983 Mill River Lead remediation project. Note silt curtain suspended from floating boom with resuspended sediment discharging from under the curtain in the foreground. Depending on the tide, river flow, rainfall, and dredge pumping, the resuspended sediment discharged over, around, and under the silt curtain into the open river. April 1983 tjs

Photo #5



View of Exide's 1983 Lead remediation of Mill River sediments. The silt curtain to upper right is intended to separate the resuspended sediment within the active dredge cell from the protected open water in the river located to the left. Note the boiling clouds of resuspended sediment blowing out from beneath the curtain into the open river water between the rope and the warning sign. April 1983 tjs

Photo # 6



View in September 1985 of the Mill River mill pond two years following Exide's Lead remediation of the Mill River in 1983. The river bottom is marked by shallow furrows from the dredge, deeper holes in the open water areas from chasing deep Lead deposits, but notably a smooth homogenized featureless substrate of little habitat value to plants or animals. 9/1985 tjs

Photo #7

Page 7, Section 2 Remedial Action Plan (RAP) Overview

2.1 Overview/Purpose.

The SedRAP is offered for two reasons: to comply with CTDEEP Consent Order No. SRD 193; and to reduce the concentration and bioavailability of lead in the Mill River study areas to levels that are protective of human health and the environment.

2.2 Desired Effects

Exide notes that “in spite of the elevated sediment lead contamination in some areas, Mill River currently exhibits a vibrant array of dependent flora and fauna. It is desirable that whatever remedial alternative is selected, consideration be given to minimizing the negative short term disturbance to these organisms and maximizing the long term benefits of reducing lead in the environment in which they live.”

Exide should provide quantitative biological baseline data and descriptions of the plants and animals that will be affected by the dredging project so that Exide may monitor species and numbers and be able to objectively determine whether or not environmental restoration is achieved following the lead remediation project.

2.2.1 Short Term

Comment:

The Overview and Desired Effects statements above capture the conceptual essence of the Exide proposal now under consideration.

Based on our experience and observations with Exide’s 1983 dredging project, Exide has yet to address the short term impacts of resuspended sediment associated with its proposed hydraulic dredge project.

In general-navigation projects where dredging is often used to maintain channels with environmentally “clean” sediments, a simple floating silt curtain is often used to mitigate adverse effects by containing resuspended sediments and impeding their discharge from the active dredge cell or area so that non-target areas and life forms will not be adversely affected by the project. Contaminated sediments are another matter entirely, requiring significantly different mitigation measures in the form of specially-designed silt curtains, redundancy, or the use of cofferdams to protect non-target areas and organisms. If Exide’s proposed silt curtain functions as did its 1983 unit, we can anticipate significant impacts beyond the dredge cell in non-target areas.

As noted in the SedRAP and depicted in the photos of the 1983 dredge project, the resuspended sediment spreads out in the water column and along the bottom throughout the dredge cell. This resuspended material of unconsolidated sediment and fine-grained organic matter is typically measured as total suspended solids (mg/L) within the plume or cloud of discoloration in the water column. If contaminated, this resuspended material settles on both contaminated and uncontaminated bottom surfaces within the dredge cell, necessitating the expansion of the dredging project to chase down and recover errant exceedances. This secondary recovery action results in increased volume and handling/treatment expenses, more time, and increased destruction of vegetation and habitat that could otherwise have remained protected and intact.

Exide proposes to monitor the water column silt plume and near-bottom mud waves for their optical properties or nephelometric signature to determine if contaminated resuspended sediment is discharging from the dredge cell curtain and thereby impacting protected spawning species.

Exide should equate its optical turbidity monitoring units to the total suspended solids concentrations (mg/L) of potentially toxic constituents in the resuspended sediment so that dredging may be halted immediately if contaminants are discharged from the dredge cell.

Exide should provide test data to describe the physical, biological and chemical properties of contaminated resuspended sediments relative to Exide's proposed use of nephelometric, optical, data units to monitor plumes and mud waves and quantitatively relate those optical units to the concentrations of suspended solids and contaminants in the water column.

Exide should provide estimates of the volume of resuspended sediment expected to be discharged beyond the dredge cell silt curtain with this dredging project; the contaminants associated with the resuspended sediment; the potential acute toxicity of the resuspended sediment on species and their age classes (e.g., adult spawning river herring, shellfish, shellfish larvae in the water column, and shellfish spatfall) if Exide proposes to conduct in-water sediment remediation activities during critical spawning periods.

Exide should provide a submerged debris survey and data on the nature and extent of significant submerged obstructions that may interfere with and foul the dredge causing increased exposure of resuspended sediments to ecological receptors.

Exide should provide test data on its proposed silt curtain (designed to be suspended six inches off the bottom) and its effectiveness in containing potentially contaminated resuspended sediment within the dredge cell.

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2.2.2 Long Term

Exide notes the long-term advantages of reduced lead contamination in the river sediments, but does not address long-term adverse effects.

The dredging project will do several things as observed in the enclosed 1983 and 1985 photos: To provide a clean dredging bottom condition, the removal of submerged debris and the dredge's mechanical agitation of the bottom sediments will leave a smooth, level, homogenized mud substrate having little diversity and value to plants and animals.

The dredging of deep contaminated sediments will involve excavating, creating new or expanding existing, significant areas of deep lifeless sumps or pits on the bottom of the river. These dredged holes, some up to three to five feet or more in depth, will typically fill with fine-grained organic matter characterized by acidic conditions, low or no dissolved oxygen, saturated with hydrogen sulfide, and be incapable of supporting plant and animal species associated with the natural river bottom. Exide characterizes these sediments as black pudding and black mayonnaise. If extensive, these holes or bottom depressions may approximate a veritable biological desert as the river has been dammed since circa-1700 during which time it has

acquired a great variety of habitats and conditions that support the plants and animals found there today. These excavated holes will represent a loss of productive bottom habitat as well as a potential safety concern for those wading in the river.

Exide should compensate for the increased anaerobic bottom conditions by submitting revised plans providing for the refilling of its dredged sumps with clean soil material and by restoring the significant submerged structural habitat elements, logs, stones, etc., on the bottom following the dredging project.

Exide should continue to monitor lead concentrations in eco-receptors following its remediation activities until such time as the present health advisory on blue-clawed crabs may be removed.

Exide should conduct a quantitative pre-dredge base-line survey of plants and animals in the affected areas and provide a long-term monitoring program so that it may document when the remediation project may be successfully concluded by Exide's success in achieving the reestablishment of plant and animal communities equivalent to the pre-dredged condition in Mill River or to the Reference Sites.

Exide should submit a revised plan for long-term monitoring and mitigation of the sediments and estuarine flora and fauna until the river is restored and the TMDL lead impairments, health advisories, and boating and use restrictions are no longer needed.

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2.3 Cleanup Criteria

Exide notes the need for a statistical analysis to determine the probability of a successful sediment remediation effort based on sampling of the residual lead concentrations in the sediment to determine if they are within the 95% confidence interval for the clean-up criteria; and if any individual sample location has a lead concentration greater than twice the clean-up target level it will need to be addressed in a post-remediation environmental net benefit analysis of the merits of any supplemental efforts to clean it up.

Comment:

Exide proposes to sample for residual lead according to a pre-determined pattern and depth range in the 0" to 6" bottom sediment. With this sampling protocol, the potentially contaminated resuspended semi-fluid sediment layer, lying above the bottom and in the deep holes where contaminated sediment will collect, may not be encountered during grid sampling and could subsequently recontaminate other areas when river currents redistribute materials in the channel.

In addition to its grid sampling, Exide should submit a revised sampling plan that will require sampling of the off-bottom layer of unconsolidated sediment in the mud wave along the water-soil interface, as well as in the deep sumps that Exide creates or enlarges during its dredge remediation activities.

Exide's undefined post-remediation net benefits analysis and supplemental remediation alternatives need to be described in additional detail in order to understand their significance.

For example, is Exide contemplating alternatives of doing nothing to mitigate residual exceedances, or a capping operation of clean soil material over the bottom residual lead exceedances (which may be compromised by future chromium remediation efforts), or of establishing a dedicated fund for future support of mitigation activities in Mill River?

Exide should submit revised plans that clearly articulate and explain the likely factors/variables in its proposed net benefits analysis and supplemental remediation alternatives for post-remediation mitigation.

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3.0 Mill River – Current Conditions

Exide describes the various remediation areas (Areas I-V), depicted in Figures 1 & 2 and Drawings 1 and 2, with respect to their physical features including bathymetry, topography, tidal regime, road crossings, pipe outfalls, structures, and history of the tidal dam and earlier gravel mining operations above I-95 for construction of the Connecticut Thruway.

Comment:

The Exide report acknowledges the 300 year old tidemill dam and the implication that the impounded mill pond may cover both Colonial and Native American materials, but does not reflect any pre-dredging survey or provision for artifacts of historical or archeological significance that may be encountered in the course of the project.

Exide should submit revised plans providing for the conservation of historically or archaeologically noteworthy materials, e.g., Colonial, Native American, if encountered during the remediation project activities.

D. The Tidemill Dam

The tidal dam structure (tidemill) is over 300 years old and has experienced severe damage in that time period. The concrete spillway on the easterly side of the tidemill island was constructed by the town when it replaced the old wooden tidegates at different times in the 1950s and '60s when it believed that the town owned the dam. In 1985-87 the easterly concrete spillway was seriously undermined to the point where the river drained out beneath the spillway and exposed the lead-contaminated river bottom sediments upstream. Dr. Kueffner, tidemill dam owner, requested that the town assist him in repairing the breach in order to protect the contaminated river sediments from scour and redistribution downstream until they could be remediated by Exide. The Conservation Commission approved the project and the Conservation Department crew repaired the leak by placing sand bags in the bottom breach where the colonial foundation stones were washed out of position beneath the dam. Our SCUBA repairs were temporary in that they were merely sand-filled bags placed on the up- and down-stream faces of the dam breach and had to be replaced in 1987. They have apparently remained in position since that time, but no assessment of their condition has been made since installation. The entire multi-year Exide remediation proposal is uniquely dependent upon the structural integrity of the tidemill dam, but Exide has not provided any information as to the condition of the structure, or what Exide is prepared to do if the structure is compromised and loses significant amounts of water during remediation activities.

Exide should be required to provide to the CTDEEP and the property owner, a Connecticut-licensed professional engineer's evaluation and opinion of the structural integrity of the various elements of the tidesmill dam, including its foundations and spillways, and recommendations concerning expedient measures for Exide to protect the dam during remediation activities, and recommendations for monitoring and reporting on its condition until Exide's sediment remediation obligations under the Consent Order have been discharged by the CTDEEP.

E. Property Ownership

Exide proposes to conduct its remediation activities in the Mill River above the head of navigation at tidesmill dam (a 36-acre mill pond extending over 4,000 feet of river channel) on public and private properties most of which Exide has not yet acknowledged or identified. The dam is apparently the property of the tidesmill owner, while the bottom of the river and the mill pond is owned by various entities, including Tidesmill Associates and Exide Group Inc. Exide depicts its ownership of the bottom of Mill River (see Figure 9, p. 46) where the property extends into the river on the easterly side of the main channel between the Post Road and the railroad. This property configuration is apparently derived through Exide's acquisition of the aluminum factory which received it from the prior owners Lacey and Sturges. The remainder of the mill pond property not conveyed to Exide appears to rest with the successors of Sturges. The river bottom property above I-95 appears to be owned by the riparian owners along the shoreline who provided their permission to the turnpike construction contractor (D'Addario) to dredge their property for sand and gravel in the 1950s where the gravel borrow pit may be found in the northerly end of Area V today. Ownership of the affected property in the proposed remediation plan is important to what the owner may allow Exide to do in terms of: dredge or cofferdam placement and excavation, existing and possible future contamination or recontamination, deployment and location of silt curtains, diversion of upland tributary streamflow away from dredge cells, possible impacts to and integrity of the tidesmill dam and other shoreline structural conditions, and the residual condition of the property following the conclusion of the remediation effort.

In addition to its own property holdings in the river, Exide should revise the proposed SedRAP and provide a delineation of, and acknowledgement from, all affected property ownerships for the properties located within the remediation areas above the head of navigation at the tidesmill dam (I-V).

F. Contour and Jurisdiction Lines

On the Drawing Set submitted with the proposed SedRAP, Exide has superimposed the elevation 5 contour over the base topographic map detail thereby obscuring the base-map elevation contours which determine the boundaries between the state's tidal and the town's inland wetlands and watercourse jurisdictions.

Exide should submit revised drawings that clearly depict all contour lines and relevant elevations along the shore as well as all soils and watercourses and the newly defined State Jurisdiction Lines in the tidal area, so that regulatory agencies may make a determination of any regulated areas and regulated activities associated with the proposed remediation project (See discussion in the IWWC section at SedRAP page 73.)

G. West Trunk Sewer Siphon

Exide schematically depicts the town's west-trunk sanitary sewer siphon system on Drawing Set Sheet No. 2 and describes its location (SedRAP p. 17) with no details. This sewer system has two parallel siphon pipes approximately two to four feet deep in remediation Area V beneath the river at Henderson Road and its disturbance by driven piles or dredge cutterhead could result in a significant loss of water quality in Mill River.

Exide should provide revised SedRAP plans, with plan, section, and profile views of this structure, over a Connecticut-licensed professional engineer's signature and seal, with recommendations in a report to the CTDEEP and Town of Fairfield, for such actions as are necessary to be taken by Exide for the proper protection of the siphon system during Exide's sediment remediation activities.

H. I-95 Sampling Area Uncertainties

Exide has not depicted any sampling within the large culverts of the I-95 river crossing between remediation Areas I and V and it is unclear if Exide has already sampled this area or if it intends to sample this area following dredging to determine if the area is contaminated. This area is important as it supports some of the highest concentrations of blue-clawed crabs and the greatest numbers of subsistence fishermen along the I-95 embankment who persist in crabbing in this area despite the posted bi-lingual public health advisories.

Exide should clarify the status of any existing sediment samples from the I-95 culverts and include the area within the culverts to ensure that the area is covered and to include the area in its pre-and post-remediation sampling program for Areas I and/or V.

I. Railroad Drain

As noted earlier, the SedRAP is silent on the open status of the railroad drain as an uninvestigated potential source of lead to the Mill River.

Exide should submit a revised SedRAP acknowledging its intention for the investigation (cleaning and video inspection) and potential need for remediation of the railroad drain prior to implementation of the SedRAP.

Page 17

J. Exide's Deferral of SedRAP Details to Future Contractor

Exide states throughout the SedRAP that the details of the remediation project are not known at this time, but will be developed by Exide and the contractor after the SedRAP is approved through its bid documents, the contract documents, and by the successful bid contractor when it provides plans for actually conducting the work. In the proposed SedRAP, Exide describes the broad concepts and general methods of the proposed remediation project, but provides no details, stating instead (at p. 17, section 3.2, 2nd para.): "These drawings (and others) will be the basis on which contractors prepare their remedial action proposals and volume estimates."

As specified in Consent Order #SRD-193 B.2.d.6, Exide is required to submit detailed sediment remedial action plans for the Commissioner's approval – not tentative, schematic or conceptual outlines proposed for the Commissioner's approval after which Exide's contractor will decide

how it will carry out the remediation project in detail. With this conceptual SedRAP approach, Exide fails to comply with its consent order, makes it very difficult for regulatory agencies to determine jurisdiction and the need for relevant permits and conditions, and increases the likelihood for potential enforcement actions involving Exide and its contractor in the future.

Exide should not defer details to a future contractor, but rather submit a revised proposed SedRAP with the details necessary for the approval of the Commissioner as required in Consent Order #SRD-193.

Page 17

3.2 Sediment Lead Distribution

Page 19, 3.3 Physical Characteristics of Study Area Sediments

Page 20, 3.4 Hazardous Waste Characteristics of Study Area Sediments

Based on over 2,000 sediment samples, Exide reports that the highest average sediment lead concentrations are present in Area II (mill pond) with the next highest in Areas I and III. These areas also have some of the deepest sediment lead deposits beneath the water column. On page 20, Exide reports that it encountered hazardous sulfide-reactive sediment materials and hazardous waste conditions including TCLP lead (toxicity characteristic leaching procedure) requiring special treatment and disposal at a hazardous waste facility. Exide anticipates the need to add chemical stabilizers to the dredge slurry in the on-shore treatment facility, but expresses no concern and offers no treatment suggestions for such hazardous materials that may be mobilized in the water column by dredging and then transported as dissolved or particulate matter with resuspended sediment flowing out of the dredge cell into non-target areas and adversely affecting protected spawning species. Further, with respect to Overall Benefits Analysis and Socio-Economic Issues, in section 4.4 (page 27) Exide finds "That risk to humans through consumption of fish/shellfish or ingestion of lead-contaminated sediment is substantially elevated in Area II, and elevated in Area I, with no substantial risk in Areas III, IV, & V." The risk of incidental ingestion of lead-contaminated sediments through such activities as swimming "is deemed to be substantially elevated in Area II and elevated in Areas I & III, with no substantial risk in Areas IV & V" and thereby concluding that only a net benefit would be gained by dredging the river.

Instead of a One-Size-Fits-All remediation method to treat both high- and low-risk areas through dredging alone, the above information supports a far more effective approach wherein Exide should be selective and use the open-water dredge system to remediate the relatively low risk Areas while using a closed system cofferdam method to excavate the high risk Areas. The use of a cofferdam in Areas I, II, and III would allow Exide to isolate the worst sediments from the river and dewater and observe the areas to be dredged; clear all debris that would normally foul the dredge; allow Exide to directly obtain confirmation samples of residual lead and be able to chase any lead exceedances without resuspending the highest-risk sediments; it would allow Exide to easily replace the excavated sediment with clean material, refill and eliminate its anaerobic sumps; and replace submerged structural habitat elements. The use of cofferdams, especially in Areas I, II, and III, could allow Exide to avoid dredge entrainment and loss of aquatic and planktonic species and age classes of fish and shellfish during protective spawning seasons.

If the cofferdams were installed prior to the protected spawning periods, Exide would avoid in-water disturbance to spawning species and could continue to conduct these cofferdam activities within the protected spawning periods. Exide already owns the easterly shoreline and shares a large portion of the bottom of Mill River in Area II with Tidemill Associates; the State apparently owns much of Area I; and Tidemill in Area III.

Concerns for flooding due to cofferdam encroachment on the riverbed are acknowledged and may be ameliorated by avoiding their encroachment within the cross-sectional areas of the existing river control sections of the I-95, Railroad, and Post Road bridge crossings. With this dual approach, cofferdam – silt curtains, Exide could work within the cofferdams during the spawning seasons, and dredge with appropriate silt curtains outside of the spawning periods (with all water quality conditions and performance standards being met), thereby protecting ecological receptors, achieving the most successful residual lead targets in the sediments, and saving a great deal of time and expense in the project.

Exide should provide a revised SedRAP that includes provision for remediating the most-contaminated sediments, at least those located in Areas I, II, and III, within excavation cells that are physically and hydraulically isolated from the river, e.g., cofferdams.

Page 22

3.6 Federal Wetlands Delineation

And Drawing Set Dwg. Sheet #11 and #12

Exide notes the need for state and federal wetlands delineation by survey and map, but does not depict on drawings 11 and 12 the soil flag numbers, the soil types, or identify any municipal IWWC regulated areas which are present and mapped along the river. Exide also omits the Federal Wetland Delineation Transect for Area I, and Drawing #11 also apparently omits soil delineations along the southeast section of the I-95 shoreline for Area I.

Exide should provide this missing information. (This discussion continues at SedRAP sect. 11, p. 73-74.)

Page 22

3.7 Natural Diversity Database (NDDDB) Research

As noted above, relict populations of river herring are located in Mill River.

Exide's proposed SedRAP of April 2012 should be revised to reflect the presence of river herring as state species of conservation concern plus the on-going review of the NOAA evaluation of river herring (alewife and bluebacked herring) for consideration under the Endangered Species Act.

Exide's proposed SedRAP should be revised to include the recommendations of the state fisheries biologist with respect to providing protection for the species of concern.

Page 25+

4.0 Human Health and Ecological Risk Assessment and Appendix II, Exponent Sediment Toxicity Study

Exide describes the human and ecological receptors that are affected in the project area and the derivation of the target residual sediment lead concentrations that are protective of those receptors on a chronic basis. Exide goes on to note (page 28, 4.4.2 Short Term/Long Term Impact) that “A proactive sediment remediation alternative (e.g., dredging) is expected to increase short-term risk factors due to physical disturbance of organisms and potential sediment resuspension thus possibly increasing (in the short term) bioavailability to river flora and fauna.”

Exide does not indicate how the increased bioavailability of potentially acutely toxic materials is to be controlled in its remediation activities, or how it supports or negates Exide’s intentions to allow resuspended sediment to be discharged from its dredge cells and affect spawning fish and shellfish species. This increased short-term risk of bioavailability to ecological receptors, such as spawning fish and shellfish, motivated Exide to conduct its remediation technology search and to propose to the CTDEEP in 2010 that it be allowed to conduct its in-water remediation activities in the Mill River during spawning periods if it could demonstrate protection of spawning fish and shellfish species.

Exide does not include any information on the short-term risk that it acknowledges, no information on what receptors may be affected, such as shellfish larvae, or when, where, or for what duration; no data on the contaminants and concentrations that may be associated with the dredge slurry, or with the resuspended sediment in the water column silt plume or the unconsolidated semi-liquid mud wave discharging at the bottom of the dredge cell silt curtain; no information on the volumes of resuspended sediment involved or potentially discharging from an active dredge cell or from all cumulative dredge cells; no information for any modified elutriate test or bioassay to determine acute toxicity of the resuspended sediment against the spawning species and age classes that Exide proposes to protect so that it may justify in-water remediation activities during their spawning periods. Exide should provide the above information in a revised proposed SedRAP.

Page 27

4.4.1 Socio-Economic Issues

Exide notes that its consultant, Exponent, Inc., expects recovery of the remediated benthic community within one to three years, but offers no information on which areas of the river it refers to, or what studies were used to support its projection, or how the different substrates, depths, and anaerobic bottom sumps affect actual recovery.

Exide has not provided any quantitative data on the pre-dredge, i.e., existing, plant and animal communities found in the proposed project area in terms of information that can be used following remediation for an objective assessment of its progress in restoring the plant and animal communities in species and numbers to pre-disturbance or Reference Site conditions. Exide, and its consultant Exponent, are silent on the environmental impacts of the post-dredging homogenized and leveled river substrates with all dredge-fouling submerged structural habitat elements removed; with new, deeper or enlarged anaerobic sumps or holes excavated in the bottom of the river. While the river is an open system and its populations of flora and fauna may be expected to re-equilibrate under normal conditions within a few years, Exide proposes to

excavate new, or aggravate existing, very abnormal bottom conditions that will inhibit or prevent long-term recolonization of flora and fauna in subaqueous pits. These are the areas where Exide will excavate three to five feet or more of bottom materials in deep pits or sumps when chasing lead exceedances. These bottom holes will fill with resuspended sediment, organic matter, and fine-grained silt characterized by acidic, anaerobic, and azoic conditions, hydrogen sulfide, and extremely soft and unstable substrates of no significant value to river flora and fauna.

Exide should provide a revised SedRAP that describes a sampling program, schedule, and how and for what time period it will monitor the post-dredging remediation river plant and animal communities, including the dredge-excavated holes or borrow pits, to ensure their restoration or compensatory mitigation, as well as the eventual removal of the lead-induced blueclaw crab health advisory and related public and private use restrictions for the river.

Page 29+

Remediation Methodology

Figure 6 Remedial Options; Figure 7 Dredging Options

Exide states that “The ultimate over-arching goal is to select the solution, which maximizes the overall benefit to the environment.” Exide summarizes five remedial options: Taking No Further Action; Monitored Natural Recovery; Capping-In-Place; Excavation In-The-Dry (Cofferdams) with off-site disposal; and Dredging with off-site disposal; noting associated risks, advantages and disadvantages, time and relative costs. Exide then compares six different dredging methods settling on Hydraulic Cutterhead Dredging as the method of choice for remediation of the lead-contaminated sediments. This one-size-fits-all approach is not conducive to an effective or efficient remediation project where conditions of lead concentrations, hazardous constituents, and threats to human and eco-receptors vary widely in degree and location.

Exide needs to fit the dredge cell remediation method to the site conditions where there are five different Areas, I-V, with different conditions of topography and bathymetry, contamination, hazardous waste materials, total and TCLP exceedances, vegetation, substrate depths, submerged debris, property ownerships, all of which require adaptive management and flexibility in remediation methods in order to achieve success in the project.

Page 32

5.5.1.1 Hydraulic Cutterhead Dredge

Exide acknowledges the need to control the generation of contaminated resuspended sediment as it is far more difficult and more costly to chase, recover, and treat it after its dispersion. Exide notes the ability to minimize resuspended sediment through adjustments to cutterhead speeds, pumping rates, and the use of floating silt screens (suspended off the bottom allowing mud waves to by-pass the curtain perimeter). Although Exide recounts how its in-situ contaminated sediment poses a threat to ecological receptors due to its chronic toxicity and must be removed down to established residual sediment-lead targets, Exide does not explain “why” it is necessary to control its resuspended sediments during the removal process. Exide provides no description of its resuspended sediment with respect to its physical and chemical properties and characteristics or its contaminants, bioavailability or degree of toxicity to protected spawning species in the river. Exide provides no lab or field test information as to the volumes of resuspended sediment that it will generate, how this

material may travel through the water column or along the bottom, or what distances it may travel up-stream or down- depending on river and tidal water current conditions.

K. Hydraulic Cutterhead Dredging and the Use of Silt Curtains

A note about hydraulic cutterhead dredging within silt curtains as proposed by Exide and why the method is not a viable alternative for blanket application in the waters of Mill River. A review of the literature (Collins 1995) shows that "Perfectly designed and operated cutters [hydraulic cutterhead dredges] will introduce a sediment slurry that will be completely entrained by the flow to the dredge pump. However, spatially varying sediment properties and cutter operations inevitably lead to a sediment slurry that the pump cannot handle, resulting in sediment resuspension or release."

How much sediment resuspension or release? In its April 2013 SedRAP (p. 35), Exide suggests that it could be as little as 0.013% or less than three cubic yards of material from the proposed 21,440 cubic yard (CY) SedRAP remediation project. In its literature review, Anchor (2003) cites studies of resuspended sediment from hydraulic dredges varying from less than one percent to over eight percent of the project material (dry weight) which could mean over 1,715 CY of contaminated material resuspended into the supposedly-isolated dredge cell water column from this 21,440 CY project. This is not unreasonable when we consider that in 1983, Exide remediated the mill pond by dredging over 4,100 CY of lead-contaminated sediment and then had to recover approximately 283 cubic yards of additional material (6.9% of project) that included mud wave and resuspended sediment within the silt curtain. The additional resuspended sediment in the water column and the bottom mud wave that were discharged from the silt curtain dredge cell into the Mill River were unaccounted for.

What happens to the resuspended sediment within the dredge cell silt curtain?

Francingues and Palermo (2005) report useful information that is worth repeating here: "What Processes Affect Silt Curtains? In many cases where silt curtains are used, the concentration of fine-grained suspended solids inside the curtain enclosure may be relatively high (i.e., in excess of 1 g/L). The suspended material may be composed of relatively large, rapidly settling particles or flocs. In the case of a typical pipeline disposal operation surrounded by a silt curtain where suspended solid concentrations are high and material usually flocculated, the vast majority (95 percent) of the fine-grained material descends rapidly to the bottom where it forms a fluid mud layer that slopes away from the source at an approximate gradient of 1:200. The other 5 percent of the material remains suspended in the water column above the fluid mud layer and is responsible for the turbid appearance of the water inside the curtain. While the curtain provides an enclosure where some of the fine-grained material may flocculate and/or settle, most of this fine-grained suspended material in the water column escapes with the flow of water and fluid mud under the curtain. The silt curtain does not indefinitely contain turbid water but instead controls the dispersion of turbid water by diverting the flow under the curtain, thereby minimizing the turbidity in the water column outside the silt curtain. Whereas properly deployed and maintained silt curtains can

effectively control the distribution of turbid water, they are not designed to contain or control fluid mud. In fact, when the accumulation of fluid mud reaches the depth of the ballast chain along the lower edge of the skirt, the curtain must be moved away from the discharge; otherwise sediment accumulation on the lower edge of the skirt can pull the curtain underwater and eventually bury it. Consequently, the rate of fluid mud accumulation relative to changes in water depth due to tides must be considered during a silt curtain operation". This report suggests that Exide's proposed remediation project may discharge over 85 cubic yards of lead-contaminated resuspended sediment into the water column as well as a potentially much greater, but unknown volume of contaminated fluid mud in bottom waves to the open waters of the Mill River. If Exide's new sediment estimate of 27,600 CY is correct, the amount of contaminated resuspended sediment could be well into the hundreds, if not thousands, of cubic yards.

Exide has not provided any test data on the matter of resuspended sediment volumes resulting from its proposed dredging activities.

In keeping with the Francingues and Palermo recommendation, Exide does not propose to secure the bottom of the supposedly-isolated dredge cell silt curtain, but instead to suspend the curtain approximately six inches off the bottom and to lift the curtain up to avoid damage during storm events. According to the Francingues and Palermo findings, we may expect that Exide's management of the dredge cell silt curtain when deployed as designed will initially discharge the bottom mud waves to spread approximately one hundred feet beneath and beyond the silt curtain and then be redistributed by river and tidal currents into uncontaminated or previously-remediated areas, as well as into the water column where it will impact the life forms and varied age classes of normally-protected fish (river herring are designated as species of state conservation concern) and shellfish species during their spawning seasons. When Exide lifts the silt curtain to protect it from damage due to storm events or operational needs, the contaminated resuspended sediment will be distributed throughout the unprotected waters of the Mill River in what will essentially be an unconfined dredging operation – inconsistent with the Clean Water Act and contrary to the CTDEEP's consent order.

In summary, Exide's lead recovery activity will entail the isolation of successive dredge "cells" by sequentially deploying a suspended perimeter panel or silt curtain around the active in-river dredging area or "cell"; then, within the supposedly-isolated dredge cell, mechanically agitating and resuspending the contaminated river sediments into the water column with a hydraulic cutterhead dredge while the dredge pump sucks up the resuspended sediment and water at about 1,500 gallons per minute and pumps most of the sediment and water as a dredge slurry to a dewatering facility. It is during this period of dynamic mechanical agitation and cutterhead motion where the contaminated resuspended sediment is not completely captured by the dredge pump, but is allowed to be distributed within the "mixing zone" of the dredge cell which is defined by the perimeter silt curtain.

Exide claims in its NPDES permit application Attachment G: Coastal Consistency Review Form (p. 2 of 5, Part III: consistency with applicable coastal use and activity goals and policies), that "Floating turbidity curtains will be in place forming dredge "cells", within

which any released suspended sediments would be contained, and outside which fish migration would be allowed at all times during the project." Exide continues in stating that turbidity instruments will be in place to notify its Operators if turbidity levels are exceeded due to a discharge of resuspended sediment from the dredge cell. Exide's statements create the impression that the resuspended sediment will be "contained" securely within the dredge cell to protect spawning species and that Exide will cause the dredging to stop if a discharge of resuspended sediment occurs, but Exide doesn't say that. Exide states in its SedRAP that resuspended sediment will in all likelihood occur and it is expected to be discharged from the dredge cell – that's the reason why Exide proposes to deploy monitoring instruments and notify the Operator of a discharge problem.

It is when the dredge cell perimeter silt curtain is compromised by river, wind or tidal currents, or by slippage of the bottom substrate, or silt curtain and equipment failure (and in Exide's application by having the silt curtain intentionally suspended off the river bottom approximately six inches and periodically removed to prevent silt curtain damage during storm and work events) that the contaminated resuspended sediment will be discharged as a point source from the dredge cell silt curtain wall into the open waters of Mill River.

At the dewatering facility where it will receive the dredge slurry at approximately 1,500 gallons per minute, the sediment-water slurry will be dewatered either mechanically or by gravity in geo-textile bags for production of a contaminated sediment cake product that will be shipped for disposal or reuse off the site. Following dewatering, the filtrate water will be treated and discharged back to the Mill River at up to approximately 330 gallons per minute (475,000 gallons per day).]

Literature Cited

1. Collins, M.A. 1995. Dredging Induced Near-field Resuspended Sediment Concentrations and Source Strengths. Dredging Operations Technical Support Program misc. paper D-95-2, Prepared for US Army Corps of Engineers, US Army Engineer Waterways Experiment Station, Vicksburg, [page 10.]
 2. Anchor Environmental C.A. L.P. 2003, Literature review of effects of suspended sediment due to dredging operations. Prepared for Los Angeles Contaminated Sediments Task Force Los Angeles, California.. One Park Plaza, Suite 600 Irvine, California 92614. June 2003. 140pp.
 3. Francingues, N. R., and Palermo, M. R. (2005). Silt curtains as a dredging project management practice, DOER Technical Notes Collection (ERDC TN-DOER-E21). U.S. Army Engineer Research and Development Center, Vicksburg, MS. 18p.
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Exide should provide a water budget and detailed explanation in a revised SedRAP for the apparent discrepancy between river dredge production slurry input rates and volumes at 1,500 gallons per minute (SedRAP Appendix VI) and treated filtrate water output discharged to the river at 330 gallons per minute (NPDES application file) and how they will be reconciled during the project.

Exide proposes to monitor the discharge of contaminated resuspended sediment from the active dredge cell by deploying monitoring instruments approximately one to two hundred feet upstream and downstream thereby proposing an enlarged mixing zone around the already defined mixing zone within the dredge cell perimeter silt curtain. Exide's expanded mixing zone in the open waters of Mill River, i.e., in the intermediate area of water space between the silt curtain and the monitoring instruments hundreds of feet away, will provide no protection to the fish and shellfish species in that portion of the river during their spawning seasons.

Exide should deploy instruments to monitor the discharge of contaminated resuspended sediment from the dredge cell silt curtain perimeter at locations along the cell's silt curtain perimeter at the bottom, top and mid-point of water depths, and with instruments and in a manner that relate the parameters monitored in the water column to the parameters of importance identified in the elutriate and toxicity tests related to the species and age classes of the fish and shellfish species expected to be present in the Mill River estuary while Exide is actively dredging during their spawning seasons.

Exide should provide an evaluation of its resuspended sediment with respect to its contaminants and biotoxicity to protected spawning species and age classes with the variables noted above, and describe how it proposes to mitigate any adverse effects consistent with the performance standards noted below.

L. Performance Standards

Exide's SedRAP project is not yet defined with respect to the performance standards within which it must operate. At this time, Exide expresses no knowledge of the volume of resuspended sediment that may be discharged from a dredge cell; or of the degree of contamination of its resuspended dredge sediments; or of their bioavailability or potential acute toxicity to eco-receptors; no idea of how the physical, chemical or biotoxic properties of the resuspended sediment silt plume and mud wave will affect non-target organisms; or be relevant to the optical monitoring instruments proposed to be deployed in a mixing-zone from 100 to 200 feet downstream of the dredge cell in order to signal potential failure of mitigation measures designed to protect non-target conditions in the open river.

Performance standards should include:

- No discharge of potentially harmful materials outside the perimeter of the dredge cell if these materials could harm the range of age classes or spawning behavior of the fish and shellfish species intended to be protected during their spawning seasons. Consider the interior of the remediation cell (whether defined by dredge silt curtain or cofferdam) as a mixing zone and the cell perimeter as a point source discharge for these resuspended contaminated sediments.
- Exide should conduct an inventory of all large naturally-occurring materials encountered in the remedial project, such as submerged stones, boulders, submerged logs and other woody debris, to their source locations, if removed, and restore them in post-dredging mitigation activities.
- Replace all sediment volumes dredged from the river with suitable clean material to restore the pre-disturbance bottom profile and physical habitat conditions.
- Restore with suitable clean materials, all sediment removed during the creation or enlargement of deep holes and anaerobic sumps.

- Monitor recovery of post-disturbance flora and fauna, including within bottom holes and depressions, and provide plans and schedules to actively restore the remediation site if natural recovery does not approximate pre-disturbance or Reference Site conditions after three years following sediment dredging in the remediation areas.
- Provide a revised SedRAP with a post-disturbance mitigation proposal with plans and schedule to accommodate activities and structures needed to achieve river restoration and its floral and faunal communities.

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5.5.3 Summary Comparison of Hydraulic and Mechanical Dredging.

Exide cites Hayes and Wu (2001) and others [no list of references cited in the report]

Exide should provide a list of cited references which it omitted from the SedRAP document.

Page 36,

5.6 Excavation (in-the-dry) Exide notes that the use of cofferdams and their water-tight enclosures with dewatering to expose the bottom sediments presents the advantage, over the alternative of dredging, of being able to view the river bottom and thereby result in lower residual lead contamination. Exide's list of disadvantages include:

- inconvenient access in the residential areas of some of the river remediation sites;

This note concerning residential areas applies to Areas III, IV and V , but Areas I and II are substantially industrial in land use, located between I-95 and the railroad with the State of Connecticut as the apparent major property owner with access to the river; and in Area II between the railroad and the Post Road where Tidemill and Exide own the river bottom property with Exide's riverbank access from its factory site. These are also the most contaminated Areas with hazardous wastes and with the greatest risk to human and ecological receptors and are the ideal candidates for consideration of remediation within cofferdams.

-uncertain bottom conditions to support cofferdam structures;

Exide should reduce its uncertainty concerning river bottom conditions by investigating the river bottom remediation areas in terms of their ability to support the use of cofferdams.

-disturbance to river sediments from driving and removing sheet piling;

Driving and removing sheet piling may disturb river sediments, but typically to a much lesser degree than the sediment disturbance associated with hydraulic dredging; and any cofferdam's sediment disturbance may be mitigated with a suitable temporary silt curtain until the cell wall is installed or subsequently removed. Further, Exide's potential dredge cell configurations depicted in Drawing Set Sheets 13 and 14 demonstrate the use of common boundary walls between contiguous cells that allow sequential remediation on both sides of the wall prior to removal of the intermediate wall thus lending themselves to minimizing sediment resuspension by serving at least two cells with the one common wall installation disturbance.

-localized diversion of river flow around the cofferdams with possible scour and redistribution of potentially-contaminated sediments.

This concern warrants investigation by Exide to determine if such possibilities exist in specific areas (e.g., see dredge prisms in Drawing Set sheet #8), but Exide's preferred alternative of anchored silt curtain dredge cells apparently poses the same type of conditions and characteristics from the river and tidal currents as would occur with a cofferdam.

I. Exide's Area I lead-contaminated sediments are primarily located in the quiescent area to the west of the main channel which focuses water currents flowing from the I-95 culverts into the railroad bridge thereby providing an apparent opportunity to isolate the most highly contaminated sediments within a cofferdam cell without significantly affecting scour of other sediments.

II. Exide's Area II lead-contaminated sediments are primarily located in the mill pond area located to the easterly side of the relatively uncontaminated channel that is on the west side of the river which flows directly from the railroad bridge to the Post Road bridge. This configuration appears to allow the construction of a cofferdam wall on the easterly side of the channel between the Post Road and the railroad without significant scour or disturbance to potentially contaminated sediments.

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6.0 Sediment Processing Options

Page 45

7.0 Material Handling and Disposal

Page 49

7.5 De-Watering Wastewater Handling, Treatment & discharge

Exide notes that its dredge pipe slurry water must be treated and discharged back to the river because its volume will exceed the capacity of the town sanitary sewer system. This discharge of treated dredge slurry waste water into the Mill River constitutes an industrial waste treatment point-source and will require an NPDES permit application under the Clean Water Act (see Commission comments on NPDES application).

As indicated in its NPDES application, Exide proposes to construct its treated filtrate discharge pipeline to Mill River on the Metro – North railroad embankment property without providing any indication from the RR if it is in agreement with this Exide plan in terms of access for construction and maintenance or for potential pipe failure and scouring of the embankment. In its plans, Exide indicates significant design conflicts in the dimensions of its in-river discharge float assembly; it locates the float in the mid-channel throat of the RR bridge where it may be damaged by debris and currents from storm events or it where it may be a source of damage to other properties; where it will interfere with boating access in the river and where it will interfere with the spawning runs of river herring in this confined area.

Exide should provide revised plans addressing the discharge float's design dimensions, pipeline construction and access, and float location; confirm RR approval of the use of its property and relocate the discharge float assembly out of the main channel of the river to avoid interference with boating, river and tidal flood events, and fish spawning runs.

It appears that the proposed hydraulic cutterhead dredge cell (where chemically reduced contaminated sediments will be mechanically agitated and diluted with water of different acidity, dissolved oxygen, etc.) will also be a point source of potential industrial waste discharges in the form of contaminated resuspended sediment from the dredge, contained within the mixing zone of the dredge cell, and, if it escapes, will be subsequently discharged from the dredge cell into the receiving waters of Mill River where it may contaminate non-target areas and, through potentially toxic effects on protected species and their life forms, significantly impact these ecological receptors. In light of the experience in Exide's 1983 remediation effort of the mill pond with its extensive discharge of resuspended sediment out of the dredge cell (see photos), the CTDEEP should anticipate extensive secondary contamination of the river.

Exide should investigate all aspects of its contaminated resuspended sediment with respect to the nature and extent of its constituents, its contamination, any acute biotoxicity, its volume, its characteristics in the mixing zone of the dredge cell, discharge beyond the dredge cell perimeter, and its forms and modes of transport, and the distances it may travel to impact downstream receptors.

Page 50

8.0 Controls

8.1 Fugitive Sediment Mitigation

Exide notes that the redistribution of some sediment is unavoidable during the implementation of any dredging project, and asserts that the mitigation objectives are to localize sediment redistribution as much as possible through the use of best management practices, engineered controls and monitoring of turbidity.

Exide should provide a sampling plan and schedule that documents the nature of its resuspended sediment, identifying its degree of contamination; potential bioavailability, any acute toxicity to fish and shellfish spawning species and their age classes, and what risk the resuspended sediment will pose to ecological receptors.

Exide should provide a study plan and schedule to document its proposed resuspended sediment monitoring procedures using optical instruments and visual observations and their relationships to the physical, chemical, and biological properties of the resuspended sediments in order to be able to determine if the proposed mitigation and monitoring systems, distances, depths, or any other variable or sampling results are protective of the environment and ecological receptors.

8.1.2 Turbidity Mitigation

Without committing Exide's contractor to a course of action, Exide's consultant, CCA, recommends that the successful bid contractor use the American Boom & Barrier Corporation's Model PC-2 silt curtain as it performed satisfactorily with the tidal currents in the Thames River. Exide states that the silt curtain will not come in contact with the river bottom (it proposes to deploy the silt curtain six inches off the bottom). Exide does not indicate the nature of the project at the Thames River reference site (e.g., for navigation or remediation?) or how it deployed the curtain with respect to the bottom, or what performance standards were evaluated with respect to satisfactory performance of the silt curtain in terms of mitigating the discharge of resuspended sediment from the dredge cell, e.g., what was the configuration of the silt curtain;

what was the physical nature and volume of the dredged sediment, the contaminated status of the resuspended sediments, what volume or percentage of the total was discharged from the dredge cell as resuspended sediment? These concerns are important to the applicability of the silt curtain product to the Exide remediation site in light of the release of contaminated resuspended sediments in the 1983 mill pond hydraulic cutterhead dredge remediation project where the additional dredge volume, 283 cu. yds., removed from the cell represented 6.9% of the design volume and did not include the suspended sediment in the plume and mud wave that discharged from the cell silt curtain.

Exide should provide a report on the operational details and performance of the recommended silt curtain in the referenced Thames River location for comparison with conditions in, and applicability to, Exide's Mill River remediation project.

In Drawing Set Sheet #13 and #14, Potential Dredge Cell Layout, Exide depicts 16 potential silt curtain layouts in the four remediation Areas, I, II, III, and V, that, while their final layout will be decided by the successful bid contractor, will have an effect on spawning species, especially river herring on their spawning runs. These silt curtain configurations encroach on the width of the river to a considerable extent and they will reduce the width and depth of the control points along the river at the tidemill dam and three bridge locations to approximately one-third to one half of the design width of the openings. This contraction of opening area, width and depth could significantly interfere with, even prevent, fish migration during spawning runs.

With Exide's consultant only "recommending" the use of the PC-2 silt curtain suspended one-half foot off the bottom, and the successful bid contractor who may decide on a different silt curtain and a greater distance off the bottom, we may expect that there will be significant adverse effects on the river herring spawning runs because the cross-sectional areas of the river channel and bridge openings are not uniform and the silt curtain layouts may not physically allow sufficient area or depth for the fish to pass by the silt curtain structures and bottlenecks without adverse effects.

If the 1983 Exide mill pond lead-contaminated sediment remediation experience with its cutterhead hydraulic dredge serves as an example, then we may expect that the spawning herring will also encounter clouds of silt plumes and mud waves of contaminated resuspended sediment being discharged from the active dredge cells into the water column at these bottlenecks. These barriers, whether due to dredging noise, clouds of resuspended sediment, or physical obstruction of the channel, will cumulatively impair or eliminate the river herring spawning run in these affected areas. To mitigate these impacts:

Exide should not conduct any in-water remediation activities that generate resuspended sediments discharging outside of the dredge cell within any protective fish or shellfish spawning seasons; Exide should limit its in-water activities to no more than twelve hours per day; Exide should conduct its in-water dredging activities only during a rising (in-coming) tide.

Exide should define the geometry and substrate conditions of the minimum submerged cross-section of river channel, as determined by an anadromous fisheries biologist, to satisfactorily pass spawning herring without any adverse effects on their behavior and meet that geometrical

and substrate configuration as a performance standard, with daily field inspections, during all in-water remediation efforts and activities.

Instead of suspended off-bottom silt curtains, Exide should examine alternative designs, including “engineered” silt curtain designs, e.g., Gunderboom, and cofferdams, and report on their performance in keeping with the intent of Exide’s representatives who researched and described them during the November 10, 2010 CTDEEP meeting in which Exide requested an exemption from dredging prohibitions during protective spawning seasons if it could demonstrate no adverse impacts on the spawning fish and shellfish species.

Page 52

In describing its deployment of silt curtains and the need to protect the curtains during storm events, Exide states that its silt curtains will be retracted, pulled up from the water column and secured to the float line, in advance of storm events. Such action to remove the protective silt curtain from an active dredge cell and allow storm-driven river or tidal currents to flush the disturbed sediment materials out of the cell will facilitate the mobilization of contaminated resuspended sediment throughout non-target areas and protected spawning species.

Exide should provide revised SedRAP plans that document the environmental impacts associated with the raising and removal of suspended off-bottom silt curtains and such actions as will mitigate these adverse impacts of the proposed dredge remediation method.

From its 1983 experience with the cutterhead hydraulic dredge working within the dredge cell defined by the Post Road and railroad embankments and a floating silt curtain along the westerly side of the mill pond, Exide may expect to find during its SedRAP implementation that the dredge-disturbed resuspended sediments will create contaminated silt plumes and mud waves of unconsolidated semi-liquid flocculants and fine-grained organic matter and sediment that will recontaminate areas that have been successfully remediated and contaminate initially clean areas having no exceedances -- both within the active dredge cell and outside of the active dredge cell.

If Exide’s earlier hydraulic cutterhead dredging experience is used, the necessary redredging of 283 CY after the targeted 4,100 CY had been remediated in 1983 suggests that there may be a 7% resuspended sediment variable as an overdredge requirement that is not accounted for in Exide’s proposed remediation sediment recovery projections; which would be even greater if it included the unknown volumes of silt plumes and mud waves discharged from the silt curtain. This behooves Exide to design its dredge cells as small as needed to remediate the target areas, and construct the dredge perimeter wall as tightly as possible, e.g., with cofferdams whenever feasible.

Exide should provide a revised SedRAP in which it documents the anticipated volumes of contaminated sediment for the base design of 21,440 (27,600) CY, and the resuspended sediment mud-wave volume, and the volume of resuspended sediment in the water column potentially discharged from the dredge cells.

Page 52

8.2 Turbidity Monitoring

Exide proposes to deploy sensors to monitor the optical properties of resuspended sediment in the water column “to ensure that any resuspended sediment is kept to a minimum and limited to the area immediately adjacent to the dredge intake and, in particular, does not migrate outside of the turbidity curtain constructed around the remediation area being dredged”.

If this were a conventional navigation project involving maintenance dredging of “clean” sediments, its primary concern would be to minimize resuspended sediment that could stress spawning species in many ways such as by physically interfering with or altering their behavior, or by silt-smothering of adult and juvenile age classes of shellfish. With contaminated materials, in addition to their physical properties, resuspended sediments present a completely different and more complex condition whose potential impacts have far more significance to non-target and protected species (and their age classes and life stages found during the protected spawning seasons) in the affected area.

Exide should provide a description of its dredge slurry and the resuspended sediment plume and mud waves and their constituents and potential contaminants; potential contaminant bioavailability and acute toxicity to protected spawning species and their age classes; and information on how Exide will translate the physical, chemical, and potentially biotoxic properties of the resuspended sediment to the optical properties it proposes to measure in the water column in order to protect non-target areas and animals.

Page 53

8.2.1 Equipment

Exide proposes that a wireless local area network be used to relay optical monitoring instrument signals (nephelometric turbidity units or NTUs) to representatives of the remediation contractor and Exide’s representative, CCA and to their cell phones whenever an exceedance is detected whereupon remediation operations will be immediately halted.

To enhance public understanding and provide for public education and information, Exide should provide a publicly accessible website for recording monitoring results on a timely basis and a forum for comment and explanation of its activities and its progress in achieving remediation goals for the river sediments.

In addition to Exide’s representatives with cell phones, the in-water suspended sediment monitoring instrument signals should be made available by relay to representatives of any regulatory or approval agency from which Exide holds a permit.

Page 53

8.2.2 Monitoring Locations

Exide proposes to locate its monitoring instruments approximately 100 and 200 feet from the outside of the turbidity curtain without knowing if the 100 – 200 foot intervening discharge mixing zone is adequate to protect non-target areas and species from the adverse effects of the contaminated resuspended sediment.

The CTDEEP and Exide should define any dredge cell mixing zone with respect to contaminated

resuspended sediment to be within the dredge cell perimeter and the “action level” to be any discharge of resuspended sediment beyond the remediation cell perimeter wall or curtain.

Page 54

8.2.2 Monitoring Locations

Exide proposes to use a mid-depth monitoring location for its NTU measurements, and in deep water (greater than ten feet) allow the Engineer to use her or his observations to decide if two depth measurements are warranted – at one-third and at two-thirds of the depth at such location.

These depth locations are not unreasonable, but should be supplemented by Exide with a third sample array by depths and locations at every active dredge cell perimeter so that Exide will monitor the resuspended sediments being discharged at the silt curtain perimeter.

Page 54

8.2.4 Parameters

Exide proposes to use action levels based on background turbidity levels without knowing the relationship between these background levels and the degree of threat posed by the proposed 5 NTUs of contaminated resuspended sediment above background level (for readings between 0 – 20 NTUs) and a 35% increase over background levels above 20 NTUs.

Before proposing specific ranges and thresholds for permissible conditions, Exide should define the properties of the resuspended sediments, their potential adverse effects on protected spawning species, and how these properties relate to the optical and visual properties and the specific ranges and thresholds of background turbidity levels that Exide proposes to use in determining “action levels”.

Page 55

Figure 10, Turbidity Monitoring Station Placement

Exide proposes to use in-river turbidity monitoring stations above and below the active dredge cell to determine the net difference for its action-levels when monitoring up-current background, or ambient, levels of turbidity, but Exide does not acknowledge the potentially significant probability of “upward creep” of the background monitoring NTU readings due to river- and tidal currents mobilizing dredged resuspended sediment travelling up- and down-stream outside of the dredge cell to artificially bias the readings of background sediment levels and thereby artificially, and mistakenly, increase the acceptable levels of resuspended sediment before action-levels are noted.

Exide should revise its SedRAP to eliminate the potential bias for upward background turbidity “creep” in its in-water remediation monitoring program.

Page 56

8.2.5 Action Levels, Record Keeping & Reporting

If its NTU action levels are exceeded, Exide proposes to use a linear time-driven sequence of inquiries, inspections and samples to seek to determine the possible cause of such discharge exceedances thereby rendering uncertain its section 8.2.2 Monitoring Locations (page 54) statement that dredging operations will halt if one of two readings exceeds a turbidity limit.

Exide's proposed sequence no longer includes a directive to halt dredging activities as it did in Exide's first edition of the SedRAP of October 2011 (page 55 "Dredging operations will be halted if the background turbidity value is significantly exceeded....").

Exide should reinstate its directive to halt dredging operations if "action level" exceedances are encountered at the outer perimeter of the dredge cell.

Exide should define objective parameters for what constitutes "significance" for evaluating any exceedances of action levels.

Page 57, section 8.3 Confirmation Sampling of River Sediments

Exide proposes post-dredging residual lead-sediment confirmation samples from the remediation areas according to a predetermined grid pattern; with samples collected from the top six inches of dredged river bottom; and directs the reader to shaded areas in the attached drawings for further detail.

To eliminate confusion over the multiple sets of shaded drawings, Exide should state specifically which set of shaded drawings it is referring to in this section, e.g., 5 & 6; 7, 8 & 9; or 13 & 14?

Exide should expand its sampling program to capture the potential layer of contaminated and unconsolidated semi-liquid flocculated materials of resuspended sediments in the interface between the water column and the bottom substrate of dredged and undredged sediment areas within a dredge cell, as well as those nearby bottom areas immediately outside of the active dredge cell.

Exide should expand its sampling program to include all excavated or enlarged bottom sumps or holes due to dredging where potentially contaminated fine-grained material will tend to collect.

Exide should expand its sampling program to monitor multiple SedRAP remediation indicators of project compliance: including post-dredging sediment depths achieved; volume of sediment disturbed by dredge cell and the volume removed by dredging; mass balance of contaminants in the river sediment and those extracted; residual lead-sediment concentrations achieved in the river.

Exide should expand its sampling program to include RCRA metals, especially chromium, and fecal coliform bacteria, as these TMDL constituents may also be found in close association with the lead-contaminated sediments; all three constituents are causes of the impaired waters of the Mill River and Southport Harbor; and may significantly affect the success of the remediation effort.

Chromium is of importance in order to know if this pollutant has been mobilized during lead remediation activities; if the removal of lead-sediment deposits has exposed residual chromium sediment exceedances that were present, but not exposed, earlier; or if lead remediation activities have resulted in contaminating new areas with chromium where there was no chromium detected in pre-dredging sampling efforts. In such cases, the questions may arise as to who "owns" such contaminated material and who is accountable/responsible for its remediation?

The highly organic sediments and shallows of the remediation Areas (I -- V) in Mill River are potential sources not only of heavy metals, but also of fecal coliform bacteria. Fairfield's shellfish water quality in Southport Harbor and nearby LIS is determined by the presence of such bacteria, as is the success of Fairfield's commercial and recreational shellfishing programs that depend on relay access to these waters. When Fairfield excavated accumulated sediments from the Pine Creek marsh channels and ditches several years ago for marsh restoration and mosquito control purposes, it apparently mobilized large numbers of bacteria in the ebb tides flowing out to LIS that subsequently resulted in the closure of recreational and commercial shellfish beds off Pine Creek and Kensie Points and Sasco Hill Beach. Exide's dredging activities may mobilize such concentrations of heavy metals and bacteria that shellfish water quality may be compromised and the shellfishing waters closed during Exide's in-water remediation activities.

Exide should provide a sampling plan and schedule for monitoring TMDL metals and bacterial contamination of shellfish waters and describe Exide's proposed mitigation actions to counteract or compensate for any impacts.

Exide's proposed SedRAP should be revised to reflect the recommendations of the state Bureau of Aquaculture with respect to monitoring shellfish water quality.

Exide should post its post-dredging remediation residual lead-sediment results to a public I & E website in a timely manner for each remediation Area (I-V) as it progresses through the project.

Page 64

9.0 Concurrent Out-of-River Remediation

Exide limits this discussion to the remediation of the upland riverbank area along the easterly side of the mill pond adjacent to the factory property.

Exide should add a new SedRAP section to include "Concurrent In-River Remediation" for the restoration of the structural elements of submerged habitat (natural debris such as stones and boulders, sunken logs and woody debris) restored to their locations as mapped during Exide's remediation activities in Areas I-V; as well as replacing clean sediment material where Exide excavates the bottom of the river; especially where Exide has excavated or enlarged deep bottom holes that will become unflushed, azoic anaerobic sumps.

Page 72

10.0 Post-Remediation Monitoring

10.1 Sediment

Exide proposes a single post-project study area-wide sampling effort to confirm the effectiveness of the remediation project using the top six inches of substrate on a pre-established grid system that may not reflect the unique conditions associated with resuspended sediment mud waves and the excavated bottom pits or sumps excavated or enlarged by Exide during its remediation project.

Exide should provide an expanded SedRAP post-remediation sampling program to include the potential layer of contaminated and unconsolidated semi-liquid flocculated materials of

resuspended sediments in the interface between the water and the bottom substrate of dredged and undredged sediment areas, as well as all sumps and holes in the bottom of the river, for RCRA metals, especially lead and chromium.

Exide's monitoring proposal appears to be limited to the one-time post-remediation mapping effort for residual lead in 10.1 Sediment.

Exide should revise its proposed SedRAP to include a new section "10.2 Long-Term Environmental Conditions and Ecological Receptors".

Exide should expand its long-term annual monitoring program with an objective sampling program to quantify flora and fauna in the river until such time as these disturbed riverine communities approximate the river's pre-disturbance baseline condition or that of the Reference Site locations.

Exide should expand its annual monitoring program of blue-clawed crabs to determine when the associated health advisory for lead may be safely removed.

Exide should expand its long-term monitoring program to include the sumps and holes that it excavated or expanded and refill them with clean soil material until they approximate adjacent non-sump areas for restored communities of plant and animal species.

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11.0 Project Permitting

(see Figure 13 and page 74)

Exide acknowledges the need for state and federal permits, the Corps of Engineers permit having already been approved in September 2012. In its first edition of the SedRap of October 2011 page 71, Exide noted that site conditions may require that Exide revise or modify its existing inland wetland permit or apply for a new permit. In this April 2012 draft, Project Permitting and Exide's Figure 13 Permitting Summary, Exide does not acknowledge any municipal regulations with which it must comply, although it notes that it is relying on the assistance of soil scientists and local permitting experts to evaluate the applicability of any town regulations.

In a project such as this proposed Exide SedRAP where Exide will be conducting activities in the river, where limited tidal action exists placing it under state and federal jurisdiction, and on and above the riverbank in soils and watercourses where federal and municipal IWWC jurisdiction may exist, the only entity in Connecticut that may determine an inland wetland regulated area through its interpretation of relevant information and definitions is the municipal inland wetland agency, i.e., the Fairfield Conservation Commission; which agency also uniquely determines what activities may be considered regulated activities in the context of the IWWC regulations.

When an activity is first proposed in Fairfield, the IW Agency initially relies on its official 100-foot scale IWWC Regulated Areas Maps to acknowledge regulated areas which consist of wetland soils, watercourses, and setbacks or upland review areas, often supplementing that mapped information with site inspections and the potential applicant's and IW Agency's soil scientists' delineations of the area in question. In areas influenced by tidal action, the state has

regulatory jurisdiction within which municipal regulation is excluded, and any municipal IWWC regulated areas will be determined to exist above the state's jurisdiction line which was previously defined as the elevation of property located one foot above local extreme high water, but is now defined by the Connecticut statutes to be a formally specified State Jurisdiction Line which has been recently established by the CTDEEP in each municipality along the Connecticut coast. Exide has not yet depicted the State Jurisdiction Line on any of its drawings, but it will need to do so on all maps so that the IW Agency may determine where its lower IWWC boundary may exist.

On its maps, Exide has apparently not yet depicted all wetland soil areas of the remediation project, nor identified the soil types that it has depicted, nor depicted the soil flagging by their unique numbers typically associated with a soil mapping effort. The Fairfield official IWWC maps depict wetland soils, watercourses and 144-foot setback upland review areas in and around the remediation project and neither set of maps, Exide's or the town's, depict the State Jurisdiction Line.

By essentially leaving the remediation project details up to the successful bidding contractors, Exide has not proposed any specific actions, structures, or locations to enable anyone to determine that a regulated activity is proposed in a regulated area and so may require a permit application. If Exide fails to provide adequate information to allow regulatory agencies to determine compliance requirements for Exide's contractor's remediation activities, Exide may find its project subject to subsequent enforcement action that could lead to a less than satisfactory remediation experience.

In keeping with the terms and intent of Consent Order #SRD-193 sec.B.2.d. and B.2.f., Exide should provide a revised proposed SedRAP that includes IWWC compliance topographic maps and plans and depict all standard contours within the project area; depict the Connecticut State Jurisdiction Line (S JL) in all views; depict the regulated areas as indicated on the official IWWC maps of the Town of Fairfield; provide a composite map of Exide's official soil map and the surveyed numbered soil flags between the S JL and the 144-ft. buffer upland review area boundary as placed by a soil scientist [the IW Agency's soil scientist retained by the IW Agency to be reimbursed at Exide's expense]; depict the watercourses that exist within the 144-ft. buffer upland review area; depict all temporary and permanent remediation activities and structures in their intended locations that Exide proposes to implement in this remediation project; depict all 10-ft. setbacks around all such activities and structures as required in the regulations of the Office of Long Island Sound Programs [CTDEEP General Permit for Coastal Remedial Activities Required By Order Sec. 3.(b)(2)(F).

Exide should then submit to the Inland Wetland Agency a "Request for Declaratory Ruling" with the above information. After reviewing these data and the site, the IW agency may then make a determination as to whether there are any inland wetland regulated activities in regulated areas.

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Figure 14 Revised Implementation Timeline

Exide's timeline specifies remediation of river sediments in a generally downstream direction, Areas I, II, III, IV, and then upstream to Area V. Remediation activities in rivers typically

proceed downstream in order to capture contaminants that may have been mobilized during the project and avoid recontamination of remediated areas.

Exide should provide a revised SedRAP report explaining its objectives in the reversed sequence for Area V and describe its program with respect to capturing potential contaminated resuspended sediments downstream of active dredge cells.

M. Additional Concerns

1. Increased Sediment Volume.

Although not addressed in its SedRAP, Exide proposes, in its regulatory permit applications, a significant increase in sediment volume to be dredged from the Mill River, i.e., from 21,440 CY to 27,600 CY. This thirty percent increase in volume is expected to affect every aspect of the proposed remediation project.

Exide should provide a revised SedRAP describing the reason(s) and justification for this significant increase in volume and integrate it with all related elements of the remediation project including, but not limited to, project depths, access points, dredge cell layouts, work schedules, multi-year timelines, sediment treatment programs, base-line surveys of flora and fauna if new remediation areas are affected, replacement volumes of clean fill material for increased depths, and related project activities.

2. Dredge Pump Capacity and the Potential to Dewater and Isolate the River Remediation Areas

Exide's hydraulic cutterhead dredge apparently has a production capacity of 1,500 gallons per minute (GPM) for a 12-hr./day operation (SedRAP Appendix VI) with a treated sediment filtrate water discharge return flow to Area II in the river of 330 GPM. In its review of the Exide NPDES application the CTDEEP notes that Exide's return discharge (based on a potential maximum flow of 475,000 gallons per day) will approximate forty percent of the 7Q10 baseflow of the Mill River which suggests that the dredge pump could represent a flow in excess of 1.8 times the baseflow of the river during low-flow periods. Under such conditions Exide could significantly lower the river water level during its dredging activities – especially if the tidemill dam water leakage increases. Exide's representatives expressed their concern for this possibility at the January 10, 2013 public meeting with the clear implication that such a low-flow condition could prevent the sediment remediation project from going forward as planned.

A plotted channel bottom profile of the remediation areas describes a series of deeper remediation basins (Areas I, II, III, and V) separated by shallow sections of channel beneath the Post Rd., RR, and I-95 bridges. The Exide SedRAP Drawing Set sheets 1 & 2 Inventory of Physical Features, and sheets 3 & 4 Mill River Water Column Thickness, are unclear, conflicting, and missing depth data within and around these bridge crossings and so make it impossible to clearly determine their invert elevations and the degree of connectivity of baseflow water between adjacent basins under the 7Q10 low flow conditions. This is important because if the river water level drops below the shallow bridge channel inverts, the dredge could quickly entrain all flora and fauna in the water column and dewater the active dredge basin between bridges, thereby cutting off the spawning fish run and preventing dredge operation due to a lack of water – especially if the dredge is working in an Area other

than Area II with its partial resupply of treatment water discharge.

In addition to the low flow conditions from the watershed (the Mill River watershed is a water supply watershed with three Aquarion Company diversions to two reservoirs plus wells and public and private impoundments downstream), the remediation river water is further reduced by the tidemill dam's ever-increasing leaking spillways and gate valves, the headrace flow, and evaporation. All of these water losses could result in significant interruption of the remediation effort and its project goals if Exide's dredge operation cannot obtain adequate make-up water without destroying the natural connectivity of river flow. Exide could then be placed in a position of having to periodically wait for rain, groundwater discharge, and tidal replenishment before restarting the dredge operation.

Exide should integrate the following in a revised SedRAP:

1. Provide a revised drawing set that clearly depicts a channel profile of the underwater contours, invert elevations, and water column thicknesses for all basins and at bridge/culvert crossings within the project area under 7Q10 low flow conditions.
2. With the assistance of a fisheries biologist, define the minimum water flow requirements and channel widths, depths and substrates needed for maintaining a channel condition satisfactory for fish passage during the sediment remediation project; and incorporate this information, with daily field inspections and monitoring, as a project performance standard for the sediment remediation work.
3. Provide a program that addresses a water budget and includes daily monitoring of river and dredge water flows and elevations with "action levels" to halt dredging if the fish-passage performance standard is not met with respect to water and invert elevations for basin Areas I, II, III, and V.
4. Provide an engineer's evaluation of the structural integrity of the tidemill dam; the nature and rate of river water discharge into the harbor from below the spillway lip, i.e., through leaks in the dam structure and headrace; recommended actions to take for limiting or reducing such discharge; recommended actions that Exide should take for protecting the tidemill dam structures during the remediation period; and a plan and schedule for monitoring of the leakage and the dam's structural integrity until the CTDEEP discharges Exide from further obligations under its Consent Order.

III. SedRAP APPENDICES

- Appendix I
Executive Summary of the Sediment Sample Collection and QAPP Report, June 2009
- Appendix II
The Exponent, Inc. "Sediment Toxicity Study: Mill River, Fairfield, Connecticut", June 2009. While limited toxicity issues were addressed in the study report with respect to the treated dredge dewatering filtrate, there is no discussion concerning potential contamination of the dredge slurry or resuspended sediment discharged from the dredge cell into the unprotected river.

Exide should provide a revised SedRAP report based on test results on the dredge elutriate and resuspended sediments and their physical, chemical, and biological properties and their potential contaminants and bio-availability and toxicity to the flora and fauna in the river

with particular emphasis on the fish and shellfish species and age classes in the river during their spawning seasons.

- Appendix III
Request for Natural Diversity Data Base (NDDDB) State Listed Species Review in which Exide describes its proposed dredge project of ± 27,600 cu. yds.
Exide provides a copy of the CTDEEP August 18, 2011 response letter for a finding of no impact which was included in its October 2011 edition of the SedRAP.
Exide should update the NDDDB review and reflect the fact of NOAA's review of the river herring species for potential inclusion under the Endangered Species Act.
- Appendix IV
CCA, LLC Health and Safety Plan
- Appendix V
Federal Wetlands Delineation Report by Environmental Planning Services March 2009.
Exide conducted federal wetland delineation transects for remediation Areas II, III, IV, and V, but did not do so for Area I; nor did it complete the soils mapping and delineation for Area I.
Exide should explain this omission, revisit the site, and provide these data for an accurate and complete delineation.
- Appendix VI
Dewatering Trial Performance December 2009
Exide provides useful information on its dewatering treatment alternatives and their total suspended solids and residual filtrate lead concentrations for all chemical conditioners in the sample trials. Exide does not indicate if its consultants conducted any analyses of the raw (untreated) sample sediment as a composite from sample containers after homogenizing and blending to approximate dredging resuspension of sediment and what that resuspended material contained in terms of lead concentrations or its potential toxicity to eco-receptors.
Exide should provide the lab bench or field trial data on resuspended sediment and an explanation describing the effects of the dredged resuspended sediments on eco-receptors with appropriate plans to mitigate any adverse effects.

IV. SEDRAP DRAWING SET

(N.B. All drawings should be revised as needed to reflect the thirty percent increase in sediment volumes to be removed in the remediation project.)

Dwg. #1 & 2: Inventory of Physical Features

The Figure 2 color aerial photograph, Mill River Sediment Study Area (11 X 17), depicts two more pipe outfalls than are indicated on Dwg. # 2 in the area northwest of I-95 north of the siphon sewer and south of Outfall #26.

Exide should explain this discrepancy as it may be relevant to its remediation activities.
See page 36 of this report section M. Additional Concerns, #2 for revising drawings to reflect bottom contours and water depths.

Dwg. #3 & 4: Mill River Water Column Thickness (Depicts the depth of the river in the remediation Areas)

See page 36 of this report section M. Additional Concerns, #2 for revising drawings to reflect bottom contours and water depths.

Dwg. #5 & 6: Final Intended Dredging Depths (in feet below river bottom) based on the clean-up criteria of 220 and 400 mg/kg of residual lead in sediment.

Exide depicts the areas where new anaerobic sumps or holes in the river bottom will be created or enlarged by the remediation activities.

Exide should provide related drawings depicting the restoration of the river bottom profile wherever it is altered by the remediation activities.

Dwg. #7, 8 &9: Dredge Prisms illustrating lead concentration at depth.

Dwg. #8 – Explain why there are no dredge prisms and no pre- or post-dredging sampling data for the large bottom area (approx. 80' X 150') in the I-95-culvert river crossing. Exide should provide pre-disturbance sampling data for this area as well as include it in its post-dredging confirmation sampling activities.

Dwg. #9 – Exide should explain why Area V sample location F-17 with a third level lead concentration of 440 mg/kg (in excess of the residual target of 400 mg/kg) has no dredge prism associated with its remediation.

Dwg. #10: Dredging Depth Cross Sections

In addition to the representative sample locations depicting existing and proposed grades with material to be removed, Exide should provide revised drawings depicting the bottom profile and cross-section views of all excavated or enlarged anaerobic sumps or holes in the river bottom as well as the suitable clean material required to restore the river bottom to predisturbance conditions wherever altered by Exide.

Dwg. #11 & 12: Edge of Mill River Survey Showing Federal Wetlands

Exide should revisit Area I and provide the missing transect and soils data for the Area. Exide should revise the drawings for local, state and federal regulatory agencies and depict the topographic contours for the project area and uplands at a uniform contour interval and in their entirety within the project areas; the State Jurisdiction Line; the IWWC regulated areas as depicted on the official IWWC maps of Fairfield; the IWWC soils as mapped by Exide's and the Wetland Agency's soil scientists; the CTDEEP GP Required by Order Section 3(b)(2)(F) 10-ft. setbacks; upland property lines and in-water property lines where located above the head-of-navigation; and all regulated activities within any regulated area.

Dwg. #13 & 14: Potential Dredge Cell Layout Non-Restrictive of Anadromous Fish Runs

As a performance standard to be applied to the in-water activities and structures of this remediation project, Exide should consult with anadromous fisheries experts and define the parameters, such as channel width and water depth, as needed to satisfactorily allow fish passage to pass artificial structures (silt curtains, bridges, etc.) without adversely affecting their behavior and ensure that it is provided.

With respect to the tidemill dam and its spillways being available for fish migration during the remediation project and deployment of silt curtains that may obstruct their passage, it should be noted that the river herring congregate and pass the dam over the easterly spillway far more frequently than over the westerly spillway. This is apparently due to the fact that the easterly

spillway is lower in elevation, of much greater depth in the attraction water plunge pool below the spillway, with a lower gradient flow-line below the spillway, and with three tidegates that open into the mill pond with the in-coming tide; all of which appear to provide more desirable conditions for passage for the river herring on the easterly rather than the westerly spillway. This important information is not reflected in Exide's plans and that could result in the obstruction of the herring run through improper location and deployment of the dredge cells during the spawning migrations.

Exide should revise the SedRAP and provide a program and schedule for documenting the passage of river herring during their spawning runs as they pass the two spillways at the tidemill dam; a revised layout of dredge cells or cofferdam in Area III, and a monitoring plan to be used during the remediation project to ensure that the project does not interfere with the spawning runs of the river herring.

V. ADDENDUM: Comments concerning the Exide Mill R. SedRAP OLISP General Permit Registration

A. GENERAL COMMENTS

(See general comments noted above in SedRAP review)

B. SPECIFIC COMMENTS

Exide Group, Inc. OLISP General Permit Registration Form

Part I: Registration Type and Fee Information:

Please identify any previous or existing permit/certificate/registration or order numbers associated with the site where the activity is proposed.

Exide responds by stating: "SRD-193; Fairfield; Hydraulic dredging, dewatering, & disposal of lead-impacted river sediment

[Exide's response implies that the hydraulic dredging activity is required by CTDEEP Consent Order #SRD-193, when in fact, Exide is proposing hydraulic dredging as its choice from several alternative methods of extracting lead-contaminated sediment from the Mill River. This dredging method is predicated on Exide's mistaken belief that it can implement such measures as are needed to effectively isolate the hydraulic dredging activity and its contaminated resuspended sediment discharges from the open waters of the Mill River. Such isolation of the sediment extraction method and discharge of contaminated resuspended sediment from the open river could be achieved by first containing the active dredge cell within a watertight perimeter cofferdam, but, instead, Exide has proposed use of a suspended off-bottom silt curtain similar to Exide's 1983 hydraulic cutterhead dredging and silt curtain activities that resulted in gross contamination of the unprotected river due to the discharge of lead-contaminated resuspended sediment from the dredge cell silt curtain into the unprotected river.

Exide has demonstrated the effectiveness of lead remediation with watertight cofferdams in confining contaminated soils and sediment in its use of steel sheet-piling along the east bank of the Mill River where Exide is currently remediating the contaminated soils of the former factory septic system leaching field. After isolation of the soils/sediments within its cofferdam, Exide

uses a back-hoe to extract the contaminated materials. Exide could as easily use a hydraulic dredge, clam-shell, drag-line, back-hoe or other excavator to remove contaminated sediments from a confined in-river cell without discharging lead-contaminated resuspended sediment to the unprotected waters of Mill River; especially, when these sediments are so highly contaminated as in Areas I, II, and III, and during the spawning season of fish and shellfish whose varied age classes will be exposed to the adverse impacts of the discharge. The issue at hand is not whether Exide should use hydraulic dredging or any other method of extracting contaminated sediment from the Mill River, but only that whatever method that Exide elects to use, Exide shall first demonstrably secure and isolate the active excavation cell and any subsequent discharge of contaminated resuspended sediment from the open waters of the river.]

Exide should provide a revised SedRAP with a proposal that will demonstrably protect eco-receptors by securing and isolating the active in-river excavation cell, and any subsequent discharge of contaminated resuspended sediment, from the open waters of the river. Exide should also protect the river flora and fauna by testing the dredge elutriate and resuspended sediment for their chemical, physical, and biological properties, constituents, contaminants, and bio-assay for acute toxicity against the species and their age classes of the fish and shellfish species present during their spawning seasons and demonstrate no adverse effects on them.]

A note about hydraulic cutterhead dredging within silt curtains as proposed by Exide and why the method is not a viable alternative for blanket application in the waters of Mill River. A review of the literature (Collins 1995) shows that "Perfectly designed and operated cutters [hydraulic cutterhead dredges] will introduce a sediment slurry that will be completely entrained by the flow to the dredge pump. However, spatially varying sediment properties and cutter operations inevitably lead to a sediment slurry that the pump cannot handle, resulting in sediment resuspension or release."

How much sediment resuspension or release? In its April 2013 SedRAP (p. 35), Exide suggests that it could be as little as 0.013% or less than three cubic yards of material from the proposed 21,440 cubic yard (CY) SedRAP remediation project. In its literature review, Anchor (2003) cites studies of resuspended sediment from hydraulic dredges varying from less than one percent to over eight percent of the project material (dry weight) which could mean over 1,715 CY of contaminated material resuspended into the supposedly-isolated dredge cell water column from this 21,440 CY project. This is not unreasonable when we consider that in 1983, Exide remediated the mill pond by dredging over 4,100 CY of lead-contaminated sediment and then had to recover approximately 283 cubic yards of additional material (6.9% of project) that included mud wave and resuspended sediment within the silt curtain. The additional resuspended sediment in the water column and the bottom mud wave that were discharged from the silt curtain dredge cell into the Mill River were unaccounted for.

What happens to the resuspended sediment within the dredge cell silt curtain?

Francingues and Palermo (2005) report useful information that is worth repeating here: "What Processes Affect Silt Curtains? In many cases where silt curtains are used, the concentration of fine-grained suspended solids inside the curtain enclosure may be relatively high (i.e., in excess of 1 g/L). The suspended material may be composed of relatively large, rapidly settling

particles or flocs. In the case of a typical pipeline disposal operation surrounded by a silt curtain where suspended solid concentrations are high and material usually flocculated, the vast majority (95 percent) of the fine-grained material descends rapidly to the bottom where it forms a fluid mud layer that slopes away from the source at an approximate gradient of 1:200. The other 5 percent of the material remains suspended in the water column above the fluid mud layer and is responsible for the turbid appearance of the water inside the curtain. While the curtain provides an enclosure where some of the fine-grained material may flocculate and/or settle, most of this fine-grained suspended material in the water column escapes with the flow of water and fluid mud under the curtain. The silt curtain does not indefinitely contain turbid water but instead controls the dispersion of turbid water by diverting the flow under the curtain, thereby minimizing the turbidity in the water column outside the silt curtain. Whereas properly deployed and maintained silt curtains can effectively control the distribution of turbid water, they are not designed to contain or control fluid mud. In fact, when the accumulation of fluid mud reaches the depth of the ballast chain along the lower edge of the skirt, the curtain must be moved away from the discharge; otherwise sediment accumulation on the lower edge of the skirt can pull the curtain underwater and eventually bury it. Consequently, the rate of fluid mud accumulation relative to changes in water depth due to tides must be considered during a silt curtain operation". This report suggests that Exide's proposed remediation project may discharge over 85 cubic yards of lead-contaminated resuspended sediment into the water column as well as a potentially much greater, but unknown volume of contaminated fluid mud in bottom waves to the open waters of the Mill River. If Exide's new sediment estimate of 27,600 CY is correct, the amount of contaminated resuspended sediment could be well into the hundreds, if not thousands, of cubic yards.

Exide has not provided any test data on the matter of resuspended sediment volumes resulting from its proposed dredging activities.

In keeping with the Francingues and Palermo recommendation, Exide does not propose to secure the bottom of the supposedly-isolated dredge cell silt curtain, but instead to suspend the curtain approximately six inches off the bottom and to lift the curtain up to avoid damage during storm events. According to the Francingues and Palermo findings, we may expect that Exide's management of the dredge cell silt curtain when deployed as designed will initially discharge the bottom mud waves to spread approximately one hundred feet beneath and beyond the silt curtain and then be redistributed by river and tidal currents into uncontaminated or previously-remediated areas, as well as into the water column where it will impact the life forms and varied age classes of normally-protected fish (river herring are designated as species of state conservation concern) and shellfish species during their spawning seasons. When Exide lifts the silt curtain to protect it from damage due to storm events or operational needs, the contaminated resuspended sediment will be distributed throughout the unprotected waters of the Mill River in what will essentially be an unconfined dredging operation – inconsistent with the Clean Water Act and contrary to the CTDEEP's consent order.

Literature Cited

4. Collins, M.A. 1995. Dredging Induced Near-field Resuspended Sediment Concentrations and Source Strengths. Dredging Operations Technical Support Program misc. paper D-95-2, Prepared for US Army Corps of Engineers, US Army Engineer Waterways Experiment Station, Vicksburg, [page 10.]
5. Anchor Environmental C.A. L.P. 2003, Literature review of effects of suspended sediment due to dredging operations. Prepared for Los Angeles Contaminated Sediments Task Force Los Angeles, California.. One Park Plaza, Suite 600 Irvine, California 92614. June 2003. 140pp.

Francingues, N. R., and Palermo, M. R. (2005). Silt curtains as a dredging project management practice, DOER Technical Notes Collection (ERDC TN-DOER-E21). U.S. Army Engineer Research and Development Center, Vicksburg, MS. 18p.

Continuing, Exide's lead recovery activity will entail the isolation of successive dredge "cells" by sequentially deploying a suspended perimeter panel or silt curtain around the active in-river dredging area or "cell"; then, within the supposedly-isolated dredge cell, mechanically agitating and resuspending the contaminated river sediments into the water column with a hydraulic cutterhead dredge while the dredge pump sucks up the resuspended sediment and water at about 1,500 gallons per minute and pumps most of the sediment and water as a dredge slurry to a dewatering facility. It is during this period of dynamic mechanical agitation and cutterhead motion where the contaminated resuspended sediment is not completely captured by the dredge pump, but is allowed to be distributed within the "mixing zone" of the dredge cell which is defined by the perimeter silt curtain.

Exide claims in its NPDES Attachment G: Coastal Consistency Review Form (p. 2 of 5, Part III: consistency with applicable coastal use and activity goals and policies), that "Floating turbidity curtains will be in place forming dredge "cells", within which any released suspended sediments would be contained, and outside which fish migration would be allowed at all times during the project." Exide continues in stating that turbidity instruments will be in place to notify its Operators if turbidity levels are exceeded due to a discharge of resuspended sediment from the dredge cell. Exide's statements create the impression that the resuspended sediment will be "contained" securely within the dredge cell to protect spawning species and that Exide will cause the dredging to stop if a discharge of resuspended sediment occurs, but Exide doesn't say that. Exide states in its SedRAP that resuspended sediment will in all likelihood occur and it is expected to be discharged from the dredge cell – that's the reason why Exide proposes to deploy monitoring instruments and notify the Operator of a discharge problem.

It is when the dredge cell perimeter silt curtain is compromised by river, wind or tidal currents, or by slippage of the bottom substrate, or silt curtain and equipment failure (and in Exide's application by having the silt curtain intentionally suspended off the river bottom approximately six inches and periodically removed to prevent silt curtain damage during storm and work events) that the contaminated resuspended sediment will be discharged as a point source from the dredge cell silt curtain wall into the open waters of Mill River.

At the dewatering facility where it will receive the dredge slurry at approximately 1,500 gallons per minute, the sediment-water slurry will be dewatered either mechanically or by gravity in geo-textile bags for production of a contaminated sediment cake product that will be shipped for disposal or reuse off the site. Following dewatering, the filtrate water will be treated and discharged back to the Mill River at up to approximately 330 gallons per minute.]

Exide:

-Exide should provide a water budget and detailed explanation in a revised SedRAP for the apparent discrepancy between river dredge production slurry input rates and volumes at 1,500 gallons per minute (SedRAP Appendix VI) and treated filtrate water output discharged to the river at 330 gallons per minute (NPDES application file) and how they will be reconciled during the project.

Exide proposes to monitor the discharge of contaminated resuspended sediment from the active dredge cell by deploying instruments approximately one to two hundred feet upstream and downstream from the mixing zone of the dredge cell perimeter silt curtain, which will provide no protection to the open waters of Mill River and the anadromous fish and shellfish species in the river during their spawning seasons.

Exide should deploy instruments to monitor the discharge of contaminated resuspended sediment from the dredge cell silt curtain perimeter at locations along the cell perimeter at the bottom, top and mid-point of water depths, and with instruments and in a manner that relate the parameters monitored in the water column to the parameters of importance identified in the elutriate and toxicity tests related to the species and age classes of the fish and shellfish species expected to be present in the Mill River estuary while Exide is actively dredging during their spawning seasons.

Part II: Registrant Information

Part III: Site and Resource Information

1. Site Name and Location:

The former Exide Battery Facility of 6.25 acres at 2190 Post Rd. and adjacent +/- 4000 ft. stretch of Mill River

Assessor's Map 231 Lot 381

[Incomplete; Exide provided two tax assessor's maps for the Area I-V project, but only identified one map and one property owner, itself, for the 4,000-foot, 36 acre project involving nearly sixty property owners.]

[This is an important section as Exide acknowledges that the project extends beyond the property boundaries of the Exide property beneath the waters of Mill River above the "Head of Navigation" as indicated on the copies of the Assessor's Maps submitted by Exide. Exide has not provided any indication of ownership or consent of the 50-60 public and private properties upon which it proposes to conduct its operations.]

Exide:

-Provide the tax assessor's maps and lot numbers for all properties lying in or adjacent to the project.

- Provide a mapped description of, and identify and delineate, the public and private property owners and their property boundaries within, adjacent to, above, and below the water surface of the Mill River in the project area.

Attachment II: Part III-9 (from OLISP application page 5 of 8) Identify all aquatic (coastal) resources on and adjacent to the site and describe the characteristics and condition of each resource.

[Exide fails to identify the existence of all coastal resources, including inland wetlands and watercourses, located within and adjacent to the project area. Exide prefaces its response by stating "The following submitted by Exponent, 2011." with no indication of the background or expertise of Exponent and the basis for its information on coastal resources; and then proceeds to list ten resource categories with generalized descriptions of their location and function, but with no acknowledgement of the presence of inland wetlands or watercourses regulated areas in the project area -- despite the fact that Exide has mapped such IWWC and presently holds an IWWC permit for regulated activities in regulated areas along the Mill River, with approved permit time extensions, from the Fairfield Conservation Commission as Inland Wetlands Agency.]

Exide:

-Provide a revised SedRAP response with a list and description of coastal resources which addresses the presence of inland wetlands and watercourses within, and adjacent to, the project area.

Part IV: Project Information

1. Describe proposed work:

Exide proposes to dredge 27,600 cubic yards of lead-impacted sediment by hydraulic dredging, pumped in a pipeline to the former factory site and dewatered via permeable textile bags; filtrate to be treated and returned to the river with the dewatered sediment cake to be disposed off-site.

[This response is important because this OLISP permit application is predicated on a required work product of Consent Order #SRD-193, i.e., the Proposed Mill River SedRAP, which specifies a volume of only 21,440 CY of sediment indicating that the scope of project expanded by 30 % without any explanation in the first two versions of the proposed SedRAP, Oct. 2011 and April 2012. This reversed procedural linkage of the SedRAP and derivative permit applications suggests that the applications are driving the proposed SedRAP – in direct opposition to the required sequence in the Consent Order. Where is the third version of the Mill River SedRAP that addresses the thirty percent increase in sediment volume from 21,440 to 27,600 cubic yards?]

Exide:

-Provide a revised Proposed Mill River SedRAP that fully explains how and why the scope of project expanded by 30% and describe how this increase in dredge volume of sediment affects all other relevant project aspects, such as phasing, operating conditions and durations, sub-systems, schedules, seasons, structures, areas, depths, and local, state,

and federal permit implications for the project.

2. Identify and evaluate any adverse environmental impacts associated with the proposed work and mitigation measures to be employed.

[Exide states that the project will disturb the benthic community of the river, stating that it is unavoidable. That turbidity curtains will be used to reduce the possibility of resuspended sediment, and the latest dredging technology will be utilized to produce the least amount of turbidity. Return water will be treated according to NPDES requirements.]

[Exide's explanation is non-responsive in that it fails to identify several obvious adverse environmental impacts and neglects to address any mitigation thereof:

- Loss of state tidal wetlands and impacts on intertidal mudflats;
- In addition to the temporary dredge-disturbance impacts to the general river bottom it does not identify the specific and discrete dredge excavation, by creation of new or expansion of existing, anaerobic sumps or holes in the bottom of the Mill River thereby increasing the significant long-term loss of benthic plant and animal habitat to conditions of organic black mayonnaise and hydrogen sulfide in anaerobic, azoic pits;
- it does not acknowledge the adverse impacts of contaminated resuspended sediments discharged from the active dredge-cell silt curtain on the life forms and age classes of fish and shellfish during their spawning seasons.]

Exide to document:

- the nature and extent of environmental impacts on, and provide progressive mitigation alternatives, i.e., avoid impacts, minimize impacts, and compensate for unavoidable impacts) for the following:

- state tidal wetlands and intertidal mud flats above and below the tidemill dam ;
- benthic substrates and environmental conditions of the bottom sediments and surrounding water column (physical, chemical and biological) within the dredged areas and created or enlarged subaqueous holes of the Mill River and Southport Harbor affected by the project.
- life forms of indigenous fish and shellfish as they may be affected by the adverse impacts of contaminated resuspended sediments discharged from the active dredge-cell silt curtain during their spawning seasons. Provide species and age class-specific toxicity studies if Exide proposes to conduct dredging activities within normally protective spawning periods.

Part V: Supporting Documents

Attachment A: plans, topographic map, tax assessor's map (OK)

Attachment B: NDDDB State Listed Species Review

[Incomplete. Needs further description to include the river herring known as Alewife as well as the Blueback Herring, their current protected status under state and federal agencies, and their typical protected spawning periods.]

Exide should provide documentation of the river herring species in Mill River, their current conservation status with respect to state and federal agencies, and their respective annual

spawning periods.

[Conflict with other permit applications and Proposed Mill River SedRAP: Exide states in Attachment B: CT NDDDB Information for Section IV.3. "The dredging of +/- 27,600 cu. yds. of lead-contaminated sediment. Hydraulic dredging methodology will be used, with sediments transported via pipeline to the site and dewatered via either mechanical dewatering or permeable textile bags."]

Exide should:

-Provide a copy of the revised Proposed Mill River SedRAP wherein is explained the thirty percent increase in dredged sediment volume and all consequent changes to any and all project elements.

-Clarify and explain the specific dewatering methodology ("via either mechanical dewatering or permeable textile bags") and revise the proposed SedRAP as necessary to reflect this method and any consequential revisions to related project elements.

Attachment D: Any additional information ,..., including,

-if the Registrant is not the property owner, documentation from the property owner acknowledging the proposed activity.

[This item is omitted by Exide for all of the 50-60 properties in and along the Mill River above the Head of Navigation except for Exide's in-river property south of the railroad and north of the Post Road. See Tax Assessor's Maps submitted by Exide.

-Exide should identify all property owners (upland and in-water above the head of navigation at tidemill dam) in and adjacent to the project. Provide documentation from all affected property owners acknowledging the proposed remediation activities on their properties.

A remediation or restoration plan if one has been prepared pursuant to the order.

[Exide submits a copy of its Proposed Mill River SedRAP.]

Request for Natural Diversity Data Base Review

Attachment C: Supplemental Information, Group 2 requirement.

Section i: Supplemental Site Information

1. Existing Conditions

Describe all natural and man-made features including wetlands, watercourses, fish and wildlife habitat, floodplains and any existing structures potentially affected by the subject activity. Such features should be depicted and labeled on the site plan that must be submitted.

Exide states to see attachment C-1 [The consultant's, Woodlot Alternatives, June 2001 qualitative description of the project area.]

2. Biological Surveys for species of conservation concern

Exide states no special survey conducted.

Section ii: Supplemental Project Information

1. Provide a schedule of all phases of the project....

Exide states its proposed project calendar.

2. Describe and quantify the proposed changes to existing conditions and describe any on-site or off-site impacts. In addition, provide an annotated site plan detailing the areas of impact and proposed changes to existing conditions.

Exide states the number of cubic yards proposed to be dredged in each Area I -- V.

(Comments on Sections i and ii:

[Exide retained a consultant, Woodlot Alternatives, to conduct a field survey in June 2001 and it is unknown as to how the 2001 survey was conducted, whether it had any quantitative components, and whether the consultant had available the hydrography of the project area, the residual lead targets and depths and how the study and these variables were integrated with the SedRAP. Since the Woodlot Alternatives study is reported to have occurred seven years prior to the Consent Order and ten years prior to the SedRAP it is unclear whether the Woodlot consultants had the remediation plan for the residual lead targets, the proposed dredge cells, depths and affected areas of dredging so that it could know how extensive the project would be and objectively evaluate its impacts. The consultant offers no opinions as to the merits of the project with respect to mitigation alternatives, or to when the affected area may be restored to a natural condition, or how the observer will be able to objectively determine when a future restored condition will have been achieved in all respects or whether additional mitigation is needed.]

Exide's response is significantly deficient and incomplete as the plans only address upland/wetland and aquatic surficial conditions without discussion of existing conditions related to wildlife and fisheries habitat; and the tide mill dam and its condition that determines all plant and animal relationships within the Mill River estuary above the dam; benthic plants and animals with respect to water depth; presence of anaerobic, azoic subaqueous holes or anaerobic sumps and their relationship to the productivity of the estuarine system of Mill River.]

Exide should:

-Expand and quantify the description of existing resource conditions initially addressed by Woodlot Alternatives including the tide mill dam and its relationship to the Mill River estuary within the project area; the water depths and their relationship to estuarine plants and animal habitats; the existing and proposed location, dimensions and configuration of the anaerobic depressions in the river bottom and their affect on estuarine productivity; and a plan and schedule for monitoring and implementing recovery of the post-remediation plant and animal estuarine communities with a compensatory mitigation plan if these elements of the estuary are not restored within three years of post-dredging remediation.

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